



December 31, 2012

Mr. Dwight Leisle  
Port of Portland  
7200 NE Airport Way  
Portland, Oregon 97218

Re: Riverbank Pipe Sampling Results  
Willamette Cove Upland Facility  
Portland, Oregon  
ECSI No. 271  
1056-03

Dear Mr. Leisle:

This letter presents the results of soil sampling activities completed under a riverbank pipe at the Willamette Cove Upland Facility (the Facility; Figures 1 and 2) in the St. Johns area of Portland, Oregon. Work at the Facility is being conducted under Voluntary Agreement EC-NWR-00-26 between the Port of Portland (Port), Metro, and the Oregon Department of Environmental Quality (DEQ; the Consent Order). The sampling activities were completed in accordance with the DEQ-approved scope presented in the *Riverbank Pipe Observations* letter (Ash Creek, 2012). The methods, procedures, and results of the chemical analyses are presented in this letter.

## BACKGROUND

The DEQ completed a site visit during the former Wharf Road area sampling completed in August 2012. Potential riverbank pipes were observed in various locations. The 5-inch steel pipes observed in the riverbank in the vicinity of locations WR-191 and WR-192 were considered to be in place (Figure 2); a photograph showing the relative position of WR-191 and WR-192 is provided in the photograph log included as Attachment A (Photograph 1). The DEQ agreed that sufficient laboratory analytical data were already available to complete the evaluation of the historical pipe in the vicinity of WR-192, however, soil sampling was recommended for the pipe in the vicinity of WR-191.

## SAMPLING ACTIVITIES

### ***Preparatory Activities***

The following activities and schedule coordination were completed in preparation for the field work.

- **Health and Safety Plan (HASP).** Ash Creek Associates, a Division of Apex Companies, LLC (Ash Creek) prepared a HASP for its personnel involved with the project.
- **Coordination of Facility Access.** The work activities were conducted in coordination with Metro.

### ***Surface Soil Sampling***

A soil sample was collected approximately 1.5 feet downslope of the riverbank pipe in the vicinity of WR-191 (Photograph 6). The sample was collected from approximately 0 to 6 inches below the ground surface (bgs). The sample was collected in accordance with Standard Operating Procedure (SOP) 2.2 (Attachment B). The sample was field screened for volatile organic compounds (VOCs) using a photoionization detector (PID) and for the presence of petroleum hydrocarbons using a sheen test in accordance with SOP 2.1 (Attachment B). No field indications of VOCs or petroleum hydrocarbons were observed.



## CHEMICAL ANALYSES

The soil sample from was submitted for the following analyses.

- Metals by EPA 6000/7000 Series Methods;
- Polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270-SIM; and
- Polychlorinated biphenyls (PCBs) by EPA Method 8082.

## ANALYTICAL RESULTS

The soil sample was submitted to ALS Environmental Services in Kelso, Washington for chemical analysis. A copy of the laboratory report is included in Attachment C (in CD-Rom format due to the length of the Level III deliverable report). The sample was analyzed on a standard turnaround time (up to 10 business days). A quality assurance review of the data was completed. No qualifiers were attached to the data as a result of our review and the data was determined to be of sufficient quality for use in this letter.

The results of the chemical analyses are provided in Table 1.

## SITE RECONNAISSANCE

The sampling described above was conducted during a period of rain in order to evaluate the potential for discharge from pipes WR-191 (Photographs 2 and 3) and WR-192 (Photographs 4 and 5). No discharge was observed from either riverbank pipe and therefore they are considered inactive.

## CONCLUSIONS

These data will be evaluated in the *Source Control Evaluation*.

If you have any questions regarding these activities, please contact the undersigned at (503) 924-4704.

Sincerely,



EXPIRES  
12/31/13

  
for

Michael J. Pickering, R.G.  
Senior Associate Hydrogeologist

Ian Maguire  
Staff, Engineering Group



## **REFERENCES**

Ash Creek, 2012. Riverbank Pipe Observations, Willamette Cove Upland Facility Portland, Oregon, ECSI No. 271.  
September 26, 2012.

## **ATTACHMENTS**

Table 1 – Soil Analytical Results

Figure 1 – Facility Location Map

Figure 2 – Upland Facility Plan

Attachment A – Photograph Log

Attachment B – Selected Standard Operating Procedures

Attachment C – Laboratory Analytical Report (CD-ROM)



**Table 1 - Soil Analytical Results**

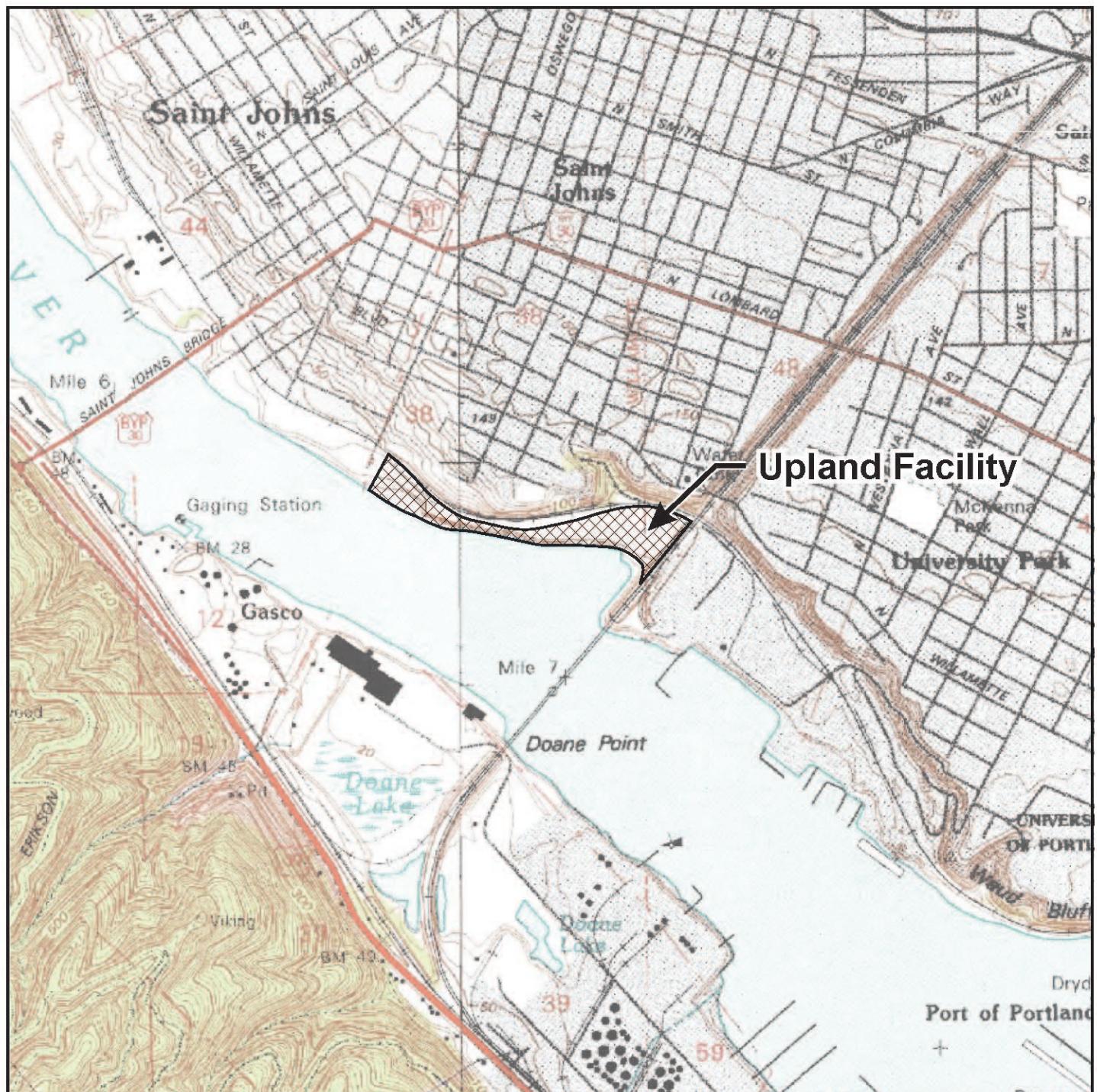
Willamette Cove Upland Facility

Portland, Oregon

Sample ID	WR-191
Date Sampled	10/31/2012
Sample Interval (inches)	0-6
<b>Metals (EPA 6000/7000 Series Methods; mg/kg)</b>	
Antimony	1.65
Arsenic	4.42
Beryllium	0.223
Cadmium	0.126
Chromium	13.7
Copper	32.2
Lead	32.9
Nickel	16.9
Selenium	<1.0
Silver	0.035
Thallium	0.040
Zinc	64
Mercury	0.049
<b>Polycyclic Aromatic Hydrocarbons (EPA 8270 SIM; ug/kg)</b>	
1-Methylnaphthalene	1.0 J
2-Methylnaphthalene	1.6 J
Acenaphthene	3.4 J
Acenaphthylene	2.6 J
Anthracene	7.0
Benzo(a)anthracene	41
Benzo(a)pyrene	56
Benzo(b)fluoranthene	76
Benzo(g,h,i)perylene	46
Benzo(k)fluoranthene	26
Chrysene	58
Dibenz(a,h)anthracene	12
Fluoranthene	69
Fluorene	1.8 J
Indeno(1,2,3-cd)pyrene	53
Naphthalene	3.5 J
Phenanthrene	26
Pyrene	67
<b>Polychlorinated Biphenyls (EPA Method 8082; ug/kg)</b>	
PCB-1016 (Aroclor 1016)	<100
PCB-1221 (Aroclor 1221)	<200
PCB-1232 (Aroclor 1232)	<100
PCB-1242 (Aroclor 1242)	<100
PCB-1248 (Aroclor 1248)	<100
PCB-1254 (Aroclor 1254)	<100
PCB-1260 (Aroclor 1260)	<100
PCB-1262 (Aroclor 1262)	<100
PCB-1268 (Aroclor 1268)	<100

**Notes:**

1. µg/kg (ppb) = micrograms per kilogram (parts per billion)
2. mg/kg (ppm) = milligrams per kilogram (parts per million)
3. < = Not detected above the method reporting limit (MRL)
4. J = Estimated.



Base map prepared from USGS 7.5-minute quadrangles as provided by TerraServer.

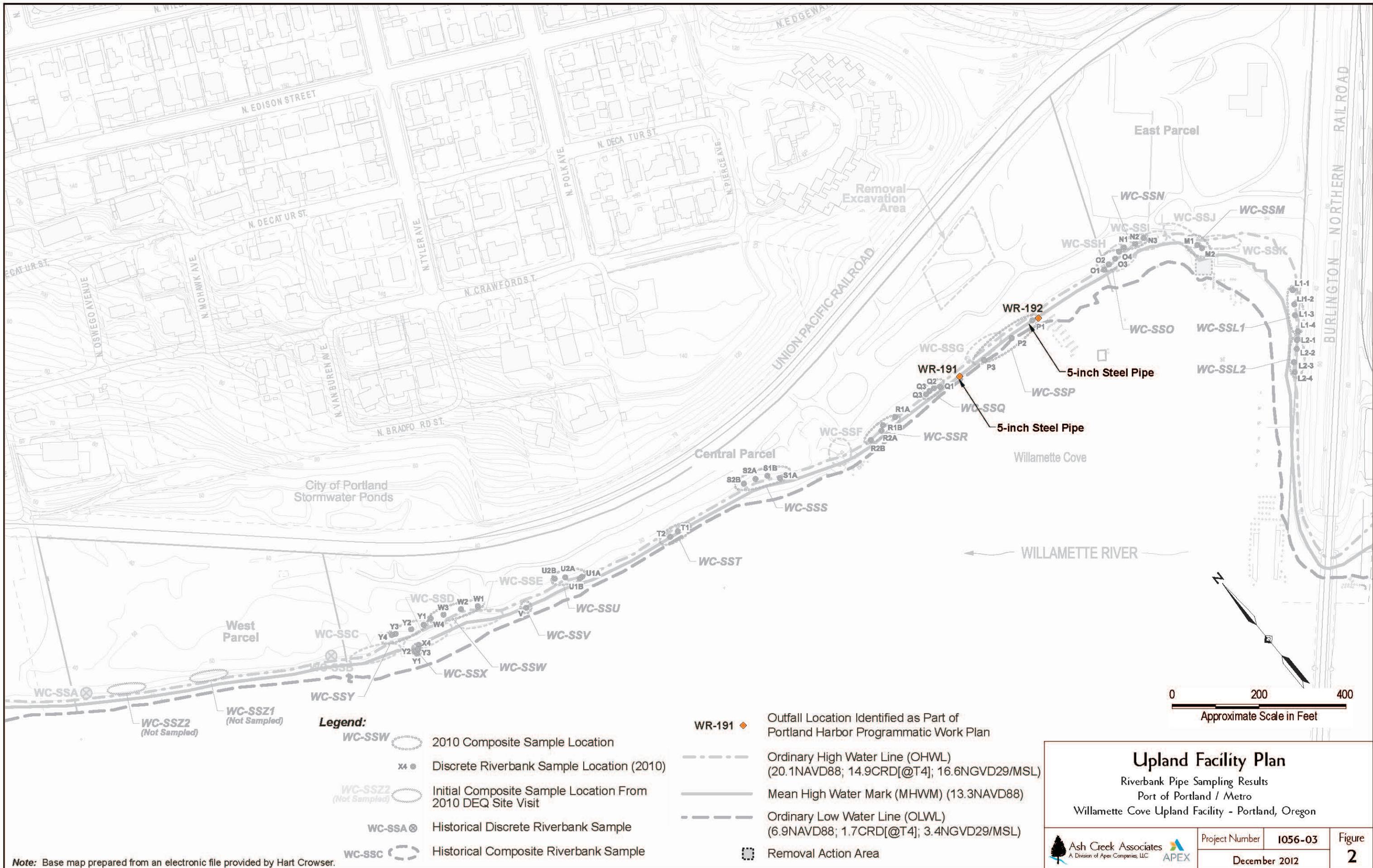
0 2,000 4,000

Approximate Scale in Feet



## Facility Location Map

Riverbank Pipe Sampling Results  
Port of Portland / Metro  
Willamette Cove Upland Facility - Portland, Oregon



## ***Attachment A***

---

### **Photograph Log**

**Attachment A**  
**PHOTOGRAPH LOG**

**Project Name:** Willamette Cove Upland Facility  
**Project Number:** 1056-03

**Client:** Port of Portland  
**Location:** Portland, Oregon

<b>Photo No:</b> 1	
<b>Photo Date:</b> 9/5/2012	
<b>Orientation:</b> East	
<b>Description:</b>  Looking from WR-191 toward WR-192 and the inner cove. The white circle highlights location of WR-192.	

<b>Photo No:</b> 2	
<b>Photo Date:</b> 10/31/2012	
<b>Orientation:</b> None	
<b>Description:</b>  WR-191. The white arrow highlights the 5-inch steel pipe. The white oval highlights the sampleable soil located approximately 1.5 feet downslope from the end of the pipe.	

**Attachment A**  
**PHOTOGRAPH LOG**

**Project Name:** Willamette Cove Upland Facility  
**Project Number:** 1056-03

**Client:** Port of Portland  
**Location:** Portland, Oregon

<b>Photo No:</b> 3	
<b>Photo Date:</b> 10/31/2012	
<b>Orientation:</b> None	
<b>Description:</b>  WR-191. No flow was observed from the pipe.	

<b>Photo No:</b> 4	
<b>Photo Date:</b> 10/31/2012	
<b>Orientation:</b> None	
<b>Description:</b>  The white oval highlights the end of WR-192.	

**Attachment A**  
**PHOTOGRAPH LOG**

**Project Name:** Willamette Cove Upland Facility  
**Project Number:** 1056-03

**Client:** Port of Portland  
**Location:** Portland, Oregon

<b>Photo No:</b> 5	
<b>Photo Date:</b> 10/31/2012	
<b>Orientation:</b> None	
<b>Description:</b>  WR-192. No flow was observed from the pipe.	

<b>Photo No:</b> 6	
<b>Photo Date:</b> 10/31/2012	
<b>Orientation:</b>	
<b>Description:</b>  WR-191 sample location.	

## ***Attachment B***

---

### **Selected Standard Operating Procedures**

**STANDARD OPERATING PROCEDURE**

SOP Number: 2.1

Date: May 6, 2009

**STANDARD FIELD SCREENING PROCEDURES**

Revision Number: 1.01

Page: 1 of 2

**1. PURPOSE AND SCOPE**

This Standard Operating Procedure (SOP) provides instructions for standard field screening. Field screening results are used to aid in the selection of soil samples for chemical analysis. This procedure is applicable during all Ash Creek Associates (ACA) soil sampling operations.

Standard field screening techniques include the use of a photoionization detector (PID) to assess for volatile organic compounds (VOCs), for the presence of petroleum hydrocarbons using a sheen test, and for non-aqueous phase liquids (NAPLs) using dyes and UV light. These methods will not detect all potential contaminants, so selection of screening techniques shall be based on an understanding of the site history. The PID is not compound or concentration-specific, but it can provide a qualitative indication of the presence of VOCs. PID measurements are affected by other field parameters such as temperature and soil moisture.

**2. EQUIPMENT AND MATERIALS**

The following materials are necessary for this procedure:

- PID with calibration gas (record daily calibration/calibration check in field notes)
- Glass jars (with aluminum foil) or resealable bags
- NAPL Dye (such as OilScreen DNAPL-Lens) if needed for NAPL screening
- UV Light Box (if needed for NAPL screening)

**3. METHODOLOGY**

Each soil sample will be field screened for VOCs using a PID (with a 10.2 eV probe) and for the presence of petroleum hydrocarbons using a sheen test. If the presence of NAPLs is suspected, then screening using dye and UV light is also to be completed. The PID used on site will be calibrated on a daily basis according to the manufacturer's specifications. The PID is also used as a safety tool. The PID can be used to monitor air during activities where vapors may be present in the breathing space. Document all calibration activities and field observations per SOP 1.1. The field screening procedures are summarized below.

PID Calibration Procedure:

- Zero the PID using ambient air from the general area where the work will be done.
- A standard gas of 100 ppm isobutylene gas is then used to calibrate the PID. If questionable readings are encountered, the PID will be recalibrated using new 100 ppm isobutylene gas.

PID Screening Procedure:

- Place a representative portion (approximately one ounce) of freshly exposed, uncompacted soil into a clean resealable plastic bag or glass jar.
- Seal the bag or jar (with aluminum foil) and shake to expose vapors from the soil matrix.
- Allow the bag to sit to reach ambient temperature.
- Carefully insert the intake port of the PID into the plastic bag or jar.
- Record the sample concentration in the field notes.

Sheen Test Procedure:

- Following the PID screen, add enough water to the bag/jar to cover the sample.
- Observe the water surface for signs of discoloration/sheen and characterize.

No Sheen (NS)	No visible sheen on the water surface
Slight Sheen (SS)	Light, colorless, dull sheen, irregular spread, not rapid. Biological content may produce a slight sheen (typically platy/blocky).
Moderate Sheen (MS)	Light to heavy coverage, may have some color/iridescence, spread is irregular to flowing, few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy sheen coverage with color/iridescence, spread is rapid, entire water surface may be covered with sheen.

**STANDARD OPERATING PROCEDURE**

SOP Number: 2.1

Date: May 6, 2009

**STANDARD FIELD SCREENING PROCEDURES**

Revision Number: 1.01

Page: 2 of 2

NAPL Dye Procedure:

- Dye can be either liquid form, dissolvable tablet, or spray applied.
- Follow manufacturers instructions for specific product used.
- NAPL testing is completed after other field screening and sample collection is complete.
- For OilScreen DANPL-Lens dye, the remaining soil sample is sprayed along its length so the soil surface is visibly wetted. A royal blue color of the dye about one minute after spraying would be considered a positive indication of NAPLs.

UV Light Screening Procedure:

- UV Light Screening involves placement of a portion of the soil sample into a resealable plastic bag (which can be the same as used for PID screening, but before sheen test is performed).
- The sample was then examined in a dark space under UV light using a small, portable UV light box.
- The plastic bag is manipulated during examination to squeeze fluid against the bag beneath the lamp.
- Fluorescence (glowing color) indicates presence of NAPLs.

# STANDARD OPERATING PROCEDURE

SOP Number: 2.2

## SURFACE SOIL SAMPLING PROCEDURES

Date: December 11, 2007

Revision Number: 0.01

Page: 1 of 2

### 1. PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) describes the methods used for obtaining surface soil samples for physical and/or chemical analysis. For purposes of this SOP, surface soil (including shallow subsurface soil) is loosely defined as soil that is present within 3 feet of the ground surface at the time of sampling. Various types of sampling equipment are used to collect surface soil samples including spoons, scoops, trowels, shovels, and hand augers.

### 2. EQUIPMENT AND MATERIALS

The following materials are necessary for this procedure:

- Spoons, scoops, trowels, shovels, and/or hand augers. Stainless steel is preferred.
- Stainless steel bowls
- Laboratory-supplied sample containers
- Field documentation materials
- Decontamination materials
- Personal protective equipment (as required by Health and Safety Plan)

### 3. METHODOLOGY

Project-specific requirements will generally dictate the preferred type of sampling equipment used at a particular site. The following parameters should be considered: sampling depth, soil density, soil moisture, use of analyses (e.g., chemical versus physical testing), type of analyses (e.g., volatile versus non-volatile). Analytical testing requirements will indicate sample volume requirements that also will influence the selection of the appropriate type of sampling tool. The project sampling plan should define the specific requirements for collection of surface soil samples at a particular site.

#### Collection of Samples

- **Volatile Analyses.** Surface soil sampling for volatile organics analysis (VOA) is different than other routine physical or chemical testing because of the potential loss of volatiles during sampling. To limit volatile loss, the soil sample must be obtained as quickly and as directly as possible. If a VOA sample is to be collected as part of a multiple analyte sample, the VOA sample portion will be obtained first. The VOA sample should be obtained from a discrete portion of the entire collected sample and should not be composited or homogenized. Sample bottles should be filled to capacity, with no headspace. Specific procedures for collecting VOA samples using the EPA Method 5035 are discussed in SOP 2-7.
- **Other Analyses.** Once the targeted sample interval has been collected, the soil sample will be thoroughly homogenized in a stainless steel bowl prior to bottling. Sample homogenizing is accomplished by manually mixing the entire soil sample in the stainless steel bowl with the sampling tool or with a clean teaspoon or spatula until a uniform mixture is achieved. If packing of the samples into the bottles is necessary, a clean stainless steel teaspoon or spatula may be used.

#### General Sampling Procedure:

- Decontaminate sampling equipment in accordance with the Sampling and Analysis Plan (SAP) before and after each individual soil sample.
- Remove surface debris that blocks access to the actual soil surface or loosen dense surface soils, such as those encountered in heavy traffic areas. If sampling equipment is used to remove surface debris,

**STANDARD OPERATING PROCEDURE**

SOP Number: 2.2

**SURFACE SOIL SAMPLING PROCEDURES**

Date: December 11, 2007

Revision Number: 0.01

Page: 2 of 2

the equipment should be decontaminated prior to sampling to reduce the potential for sample interferences.

- When using a hand auger, push and rotate downward until the auger becomes filled with soil. Usually a 6- to 12-inch long core of soil is obtained each time the auger is inserted. Once filled, remove the auger from the ground and empty into a stainless steel bowl. If a VOA sample is required, the sample should be taken directly from the auger using a teaspoon or spatula and/or directly filling the sample container from the auger. Repeat the augering process until the desired sample interval has been augered and placed into the stainless steel bowl.

**Backfilling Sample Locations:**

Backfill in accordance with federal and state regulations including OAR 690-240 (e.g., bentonite requirements). The soils from the excavation will be used as backfill unless project-specific or state requirements include the use of clean backfill material.

***Attachment C***

---

**Laboratory Analytical Report (CD-ROM)**



November 30, 2012

Analytical Report for Service Request No: K1211013

Michael Pickering  
Ash Creek Associates  
3015 SW First Avenue  
Portland, OR 97201

**RE: 1056-03**

Dear Michael:

Enclosed are the results of the sample submitted to our laboratory on November 01, 2012. For your reference, these analyses have been assigned our service request number K1211013.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at [www.caslab.com](http://www.caslab.com). All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at Lisa.Domenighini@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc. dba ALS Environmental

A handwritten signature in blue ink that appears to read "Lisa Domenighini".

Lisa Domenighini  
Project Manager

LD/ln

Page 1 of 108



ADDRESS 1317 S. 13<sup>th</sup> Avenue, Kelso, WA 98626  
PHONE +1 360 577 7222 | FAX +1 360 636 1068

Columbia Analytical Services, Inc.

Part of the ALS Group A Campbell Brothers Limited Company

Environmental

[www.caslab.com](http://www.caslab.com) • [www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

## Inorganic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

## Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

## Organic Data Qualifiers

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

## Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**Columbia Analytical Services, Inc. dba ALS Environmental (ALS) - Kelso**  
**State Certifications, Accreditations, and Licenses**

Agency	Web Site	Number
Alaska DEC UST	<a href="http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx">http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx</a>	UST-040
Arizona DHS	<a href="http://www.azdhs.gov/lab/license/env.htm">http://www.azdhs.gov/lab/license/env.htm</a>	AZ0339
Arkansas - DEQ	<a href="http://www.adeq.state.ar.us/techsvs/labcert.htm">http://www.adeq.state.ar.us/techsvs/labcert.htm</a>	88-0637
California DHS (ELAP)	<a href="http://www.cdpb.ca.gov/certlic/labs/Pages/ELAP.aspx">http://www.cdpb.ca.gov/certlic/labs/Pages/ELAP.aspx</a>	2286
DOD ELAP	<a href="http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm">http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm</a>	L12-28
Florida DOH	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E87412
Georgia DNR	<a href="http://www.gaepd.org/Documents/techguide_pcb.html#cel">http://www.gaepd.org/Documents/techguide_pcb.html#cel</a>	881
Hawaii DOH	Not available	-
Idaho DHW	<a href="http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx">http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx</a>	-
Indiana DOH	<a href="http://www.in.gov/isdh/24859.htm">http://www.in.gov/isdh/24859.htm</a>	C-WA-01
ISO 17025	<a href="http://www.pjlabs.com/">http://www.pjlabs.com/</a>	L12-27
Louisiana DEQ	<a href="http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx">http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx</a>	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	<a href="http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html">http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html</a>	9949
Minnesota DOH	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	053-999-368
Montana DPHHS	<a href="http://www.dphhs.mt.gov/publichealth/">http://www.dphhs.mt.gov/publichealth/</a>	CERT0047
Nevada DEP	<a href="http://ndep.nv.gov/bsdw/lbservice.htm">http://ndep.nv.gov/bsdw/lbservice.htm</a>	WA35
New Jersey DEP	<a href="http://www.nj.gov/dep/oqa/">http://www.nj.gov/dep/oqa/</a>	WA005
New Mexico ED	<a href="http://www.nmenv.state.nm.us/dwb/Index.htm">http://www.nmenv.state.nm.us/dwb/Index.htm</a>	-
North Carolina DWQ	<a href="http://www.dwqlab.org/">http://www.dwqlab.org/</a>	605
Oklahoma DEQ	<a href="http://www.deq.state.ok.us/CSDnew/labcert.htm">http://www.deq.state.ok.us/CSDnew/labcert.htm</a>	9801
Oregon – DEQ (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	WA200001
South Carolina DHEC	<a href="http://www.scdhec.gov/environment/envserv/">http://www.scdhec.gov/environment/envserv/</a>	61002
Texas CEQ	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	704427-08-TX
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C1203
Wisconsin DNR	<a href="http://dnr.wi.gov/">http://dnr.wi.gov/</a>	998386840
Wyoming (EPA Region 8)	<a href="http://www.epa.gov/region8/water/dwhome/wyomingdi.html">http://www.epa.gov/region8/water/dwhome/wyomingdi.html</a>	-
Kelso Laboratory Website	<a href="http://www.caslab.com">www.caslab.com</a>	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at [www.caslab.com](http://www.caslab.com) or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

## ALS ENVIRONMENTAL

**Client:** Ash Creek Associates, Inc.      **Service Request No.:** K1211013  
**Project:** Willamette Cove/1056-03      **Date Received:** 11/1/12  
**Sample Matrix:** Soil

### **Case Narrative**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier III deliverables including summary forms for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

#### **Sample Receipt**

One soil sample was received for analysis at ALS Environmental on 11/1/12. The sample was received in good condition and consistent with the accompanying chain of custody form. The sample was stored in a refrigerator at 4°C upon receipt at the laboratory.

#### **Total Metals**

##### **Matrix Spike Recovery Exceptions:**

The matrix spike recovery of Arsenic, Selenium and Zinc for sample WR-191 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was appropriate.

Antimony recoveries are generally low for soil and sediment samples when digested using EPA Method 3050B. Despite anticipated low recoveries, the method is still generally prescribed because of its versatility for general metals analysis. Antimony results (in conjunction with the matrix spike recovery) from this procedure should only be used as indicators to estimate concentrations. The matrix spike recovery of Antimony for sample WR-191 was below the Method control criterion. Since low recoveries resulted from a method defect and were possibly magnified by certain matrix components, no corrective action was appropriate. Alternative procedures that specifically target Antimony are available but were not specified for this project. The associated QA/QC results (e.g. control sample, calibration standards, etc.) indicated the analysis was in control.

##### **Relative Percent Difference Exceptions:**

The Relative Percent Difference (RPD) for the replicate analysis of Arsenic, Beryllium and Lead in sample WR-191 was outside the Method control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

#### **PCB Aroclors by EPA Method 8082**

No anomalies associated with the analysis of these samples were observed.

Approved by \_\_\_\_\_



## **Polynuclear Aromatic Hydrocarbons by EPA Method 8270**

### **Calibration Verification Exceptions:**

The following analytes were flagged as outside the upper control criterion for Continuing Calibration Verification (CCV) MS11\1126F033.D: Indeno(1,2,3-cd)pyrene. In accordance with the EPA Method 8270D, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the CAS SOP. The CCV met these criteria. The data quality was not affected. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Approved by

A handwritten signature in blue ink, appearing to read "David Dominguez".





Ash Creek Associates, Inc.  
Environmental and Geotechnical Consultants

Environmental and Geotechnical Consultants

## **CHAIN OF CUSTODY RECORD**

**Client Name:** Ash Creek Associates  
**Address:** 3015 SW First Ave  
**City/State/Zip:** Portland, OR 97201

**Telephone Number:** 503.924.4704  
**Fax No.:** 503.943.6357

<sup>7</sup> KU11015

**Project Manager:** Michael Pickering

## **Project Name: Willamette Cove**

Project Number: 1056-03

**Sampler Name:** Ian Maguire

Analytical Lab: ALS

Report To: Michael Pickering

Page: 1 of 1

PC Sisa

## Cooler Receipt and Preservation Form

Client / Project: ASH CREEKService Request K12 11013Received: 11/1/12 Opened: 11/1/12 By: BT Unloaded: 11/1/12 By: BT

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other               NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? \_\_\_\_\_

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Temp	Corr. Temp	Raw Blank	Corr. Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
3.6	3.6	—	—	Ø	309	NA			

7. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves \_\_\_\_\_
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, &amp; Resolutions: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

Analytical Results

**Client:** Ash Creek Associates, Inc. **Service Request:** K1211013  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Total Solids**

**Prep Method:** NONE **Units:** PERCENT  
**Analysis Method:** 160.3M **Basis:** Wet  
**Test Notes:**

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>	<b>Date Analyzed</b>	<b>Result</b>	<b>Result Notes</b>
WR-191	K1211013-001	10/31/2012	11/01/2012	11/02/2012	86.6	

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** 10/31/2012  
**Date Received:** 11/01/2012  
**Date Analyzed:** 11/02/2012

**Duplicate Sample Summary****Total Solids**

<b>Prep Method:</b>	NONE	<b>Units:</b>	PERCENT
<b>Analysis Method:</b>	160.3M	<b>Basis:</b>	Wet

**Test Notes:**

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
WR-191	K1211013-001	86.6	85.5	86.1	1	

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**- Cover Page -**  
**INORGANIC ANALYSIS DATA PACKAGE**

**Client:** Ash Creek Associates, Inc.  
**Project Name:**  
**Project No.:** 1056-03

**Service Request:** K1211013

<u>Sample Name:</u>	<u>Lab Code:</u>
<u>WR-191</u>	<u>K1211013-001</u>
<u>WR-191D</u>	<u>K1211013-001D</u>
<u>WR-191S</u>	<u>K1211013-001S</u>
<u>Method Blank</u>	<u>K1211013-MB</u>

**Comments:**

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 1 -

**INORGANIC ANALYSIS DATA PACKAGE**

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Date Collected:** 10/31/12

**Project Name:** NA

**Date Received:** 11/01/12

**Matrix:** SOIL

**Units:** mg/Kg

**Basis:** DRY

**Sample Name:** WR-191

**Lab Code:** K1211013-001

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.049	0.009	5.0	11/07/12	11/09/12	1.65		N
Arsenic	6020A	0.51	0.06	5.0	11/05/12	11/13/12	4.42		N*
Beryllium	6020A	0.020	0.003	5.0	11/05/12	11/13/12	0.223		*
Cadmium	6020A	0.020	0.003	5.0	11/05/12	11/13/12	0.126		
Chromium	6020A	0.20	0.03	5.0	11/05/12	11/13/12	13.7		
Copper	6020A	0.10	0.05	5.0	11/05/12	11/13/12	32.2		
Lead	6020A	0.051	0.009	5.0	11/05/12	11/13/12	32.9		*
Mercury	7471B	0.021	0.002	1.0	11/06/12	11/08/12	0.049		
Nickel	6020A	0.20	0.03	5.0	11/05/12	11/13/12	16.9		
Selenium	6020A	1.0	0.2	5.0	11/05/12	11/13/12	0.2	U	N
Silver	6020A	0.019	0.008	5.0	11/07/12	11/09/12	0.035		
Thallium	6020A	0.020	0.002	5.0	11/05/12	11/13/12	0.040		
Zinc	6020A	0.5	0.2	5.0	11/05/12	11/13/12	64.0		N

**% Solids:** 86.6

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 1 -

**INORGANIC ANALYSIS DATA PACKAGE**

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Date Collected:**

**Project Name:** NA

**Date Received:**

**Matrix:** SOIL

**Units:** mg/Kg

**Basis:** DRY

**Sample Name:** Method Blank

**Lab Code:** K1211013-MB

Analyte	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Antimony	6020A	0.050	0.009	5.0	11/07/12	11/09/12	0.009	U	N
Arsenic	6020A	0.50	0.06	5.0	11/05/12	11/13/12	0.06	U	N*
Beryllium	6020A	0.020	0.003	5.0	11/05/12	11/13/12	0.003	U	*
Cadmium	6020A	0.020	0.003	5.0	11/05/12	11/13/12	0.004	J	
Chromium	6020A	0.20	0.03	5.0	11/05/12	11/13/12	0.05	J	
Copper	6020A	0.10	0.05	5.0	11/05/12	11/13/12	0.05	U	
Lead	6020A	0.050	0.009	5.0	11/05/12	11/13/12	0.009	U	*
Mercury	7471B	0.020	0.002	1.0	11/06/12	11/08/12	0.002	U	
Nickel	6020A	0.20	0.03	5.0	11/05/12	11/13/12	0.05	J	
Selenium	6020A	1.0	0.2	5.0	11/05/12	11/13/12	0.2	U	N
Silver	6020A	0.020	0.008	5.0	11/07/12	11/09/12	0.008	U	
Thallium	6020A	0.020	0.002	5.0	11/05/12	11/13/12	0.003	J	
Zinc	6020A	0.5	0.2	5.0	11/05/12	11/13/12	0.2	J	N

**% Solids:** 100.0

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 2a -****INITIAL AND CONTINUING CALIBRATION VERIFICATION**

Client: Ash Creek Associates, Inc.

Service Request: K1211013

Project No.: 1056-03

Project Name: NA

ICV Source: Inorganic Ventures

CCV Source: CAS MIXED

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					Method
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Antimony	25.0	24.4	98	25.0	25.1	100	25.3	101	6020A
Arsenic	25.0	26.6	106	25.0	25.8	103	24.8	99	6020A
Beryllium	2.5	2.7	108	25.0	25.2	101	24.9	100	6020A
Cadmium	12.5	12.9	103	25.0	25.2	101	25.7	103	6020A
Chromium	10.0	10.5	105	25.0	25.1	100	24.1	96	6020A
Copper	12.5	13.0	104	25.0	24.9	100	23.7	95	6020A
Lead	25.0	26.4	106	25.0	25.2	101	25.8	103	6020A
Mercury	5.00	4.78	96	5.00	5.03	101	4.88	98	7471B
Nickel	25.0	26.1	104	25.0	25.0	100	23.9	96	6020A
Selenium	25.0	27.0	108	25.0	26.5	106	26.3	105	6020A
Silver	12.5	12.6	101	25.0	25.0	100	25.0	100	6020A
Thallium	25.0	26.5	106	25.0	25.1	100	25.6	102	6020A
Zinc	25.0	25.3	101	25.0	25.1	100	25.1	100	6020A

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 2a -****INITIAL AND CONTINUING CALIBRATION VERIFICATION****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**ICV Source:** Inorganic Ventures**CCV Source:** CAS MIXED**Concentration Units:** ug/L

<b>Analyte</b>	<b>Initial Calibration</b>			<b>Continuing Calibration</b>					<b>Method</b>
	<b>True</b>	<b>Found</b>	<b>%R(1)</b>	<b>True</b>	<b>Found</b>	<b>%R(1)</b>	<b>Found</b>	<b>%R(1)</b>	
Antimony				25.0	25.2	101	25.1	100	6020A
Mercury				5.00	4.91	98			7471B
Silver				25.0	25.1	100	24.9	100	6020A

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 2a -****INITIAL AND CONTINUING CALIBRATION VERIFICATION****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**ICV Source:** Inorganic Ventures**CCV Source:** CAS MIXED**Concentration Units:** ug/L

<b>Analyte</b>	<b>Initial Calibration</b>			<b>Continuing Calibration</b>					<b>Method</b>
	<b>True</b>	<b>Found</b>	<b>%R(1)</b>	<b>True</b>	<b>Found</b>	<b>%R(1)</b>	<b>Found</b>	<b>%R(1)</b>	
Antimony				25.0	25.4	102	25.1	100	6020A
Silver				25.0	24.8	99	25.0	100	6020A

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 2a -****LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION**Client: Ash Creek Associates, Inc.SDG No.: K1211013Contract: 1056-03Lab Code: CASKCase No.:                  SAS No.:                 Initial Calibration Source: Inorganic VenturesContinuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
<b>LLICV1</b>									
	Antimony	0.116	0.10	116	70.0 - 130.0	MS	11/09/12	10:28	110912BMS
	Silver	0.045	0.04	112	70.0 - 130.0	MS	11/09/12	10:28	110912BMS
<b>LLCCVS1</b>									
	Antimony	0.090	0.10	90	70.0 - 130.0	MS	11/09/12	11:12	110912BMS
	Silver	0.041	0.04	102	70.0 - 130.0	MS	11/09/12	11:12	110912BMS
<b>LLCCVS2</b>									
	Antimony	0.085	0.10	85	70.0 - 130.0	MS	11/09/12	12:48	110912BMS
	Silver	0.043	0.04	108	70.0 - 130.0	MS	11/09/12	12:48	110912BMS
<b>LLCCVS3</b>									
	Antimony	0.085	0.10	85	70.0 - 130.0	MS	11/09/12	13:47	110912BMS
	Silver	0.042	0.04	105	70.0 - 130.0	MS	11/09/12	13:47	110912BMS
<b>LLICVS1</b>									
	Arsenic	1.15	1.00	115	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Beryllium	0.043	0.04	108	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Cadmium	0.049	0.040	122	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Chromium	0.42	0.40	105	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Copper	0.20	0.20	100	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Lead	0.107	0.10	107	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Nickel	0.42	0.40	105	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Selenium	2.09	2.0	104	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Thallium	0.046	0.040	115	70.0 - 130.0	MS	11/13/12	10:28	111312BMS
	Zinc	1.09	1.00	109	70.0 - 130.0	MS	11/13/12	10:28	111312BMS

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 2a -****LOW LEVEL INITIAL CALIBRATION AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION**Client: Ash Creek Associates, Inc.SDG No.: K1211013Contract: 1056-03Lab Code: CASK

Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_

Initial Calibration Source: Inorganic VenturesContinuing Calibration Source: CAS MIXED

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
<b>LLCCVS1</b>									
	Arsenic	1.10	1.00	110	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Beryllium	0.040	0.04	100	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Cadmium	0.043	0.040	108	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Chromium	0.36	0.40	90	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Copper	0.18	0.20	90	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Lead	0.110	0.10	110	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Nickel	0.36	0.40	90	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Selenium	2.30	2.0	115	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Thallium	0.046	0.040	115	70.0 - 130.0	MS	11/13/12	11:59	111312BMS
	Zinc	1.12	1.00	112	70.0 - 130.0	MS	11/13/12	11:59	111312BMS

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 2b -

**CRDL STANDARD FOR AA AND ICP**

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Project Name:** NA

**Concentration Units:** ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP			
	True	Found	%R	Initial	True	Found	%R
Mercury	0.20	0.186	93				

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 3 -****BLANKS****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**Preparation Blank Matrix (soil/water): WATER****Preparation Blank Concentration Units (ug/L or mg/kg): ug/L**

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Method
		C	1	C	2	C	3	
Antimony	0.018	U	0.018	U	0.018	U	-0.022	J
Arsenic	0.12	U	0.12	U	0.12	U		6020A
Beryllium	0.006	U	0.006	U	0.008	J		6020A
Cadmium	0.006	U	0.006	U	0.006	U		6020A
Chromium	0.06	U	0.06	U	0.06	U		6020A
Copper	0.10	U	0.10	U	0.10	U		6020A
Lead	0.018	U	0.018	U	0.018	U		6020A
Mercury	0.02	U	0.02	U	0.02	U	0.02	U
Nickel	0.06	U	0.06	U	0.06	U		6020A
Selenium	0.4	U	0.4	U	0.4	U		6020A
Silver	0.016	U	0.016	U	0.016	U	0.016	U
Thallium	0.007	J	0.004	U	0.012	J		6020A
Zinc	0.4	U	0.4	U	0.4	U		6020A

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 3 -

**BLANKS**

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Project Name:** NA

**Preparation Blank Matrix (soil/water): WATER**

**Preparation Blank Concentration Units (ug/L or mg/kg): ug/L**

Analyte	Initial Calib. Blank (ug/L)	Continuing Calibration Blank (ug/L)						Method	
		C	1	C	2	C	3		
Antimony			-0.023	J	-0.023	J	0.018	U	6020A
Silver			0.016	U	0.016	U	0.016	U	6020A

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 4 -****ICP INTERFERENCE CHECK SAMPLE****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**ICP ID Number:** K-ICP-MS-03**ICS Source:** Inorganic Ventures**Concentration Units): ug/L**

<b>Analyte</b>	<b>True</b>		<b>Initial Found</b>			<b>Final Found</b>		
	<b>Sol.A</b>	<b>Sol.AB</b>	<b>Sol.A</b>	<b>Sol.AB</b>	<b>%R</b>	<b>Sol.A</b>	<b>Sol.AB</b>	<b>%R</b>
Arsenic	0.0	25.0	0.1	27.1	108			
Beryllium	0.0		0.0	0.0				
Cadmium	0.0	25.0	0.3	26.2	105			
Chromium	0.0	50.0	0.4	53.8	108			
Copper	0.0	50.0	0.6	50.0	100			
Lead	0.0		0.1	0.1				
Nickel	0.0	50.0	1.6	52.1	104			
Selenium	0.0	25.0	0.1	27.1	108			
Thallium	0.0		0.1	0.1				
Zinc	0.0	25.0	2.0	27.1	108			

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 4 -****ICP INTERFERENCE CHECK SAMPLE****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**ICP ID Number:** K-ICP-MS-02**ICS Source:** Inorganic Ventures**Concentration Units): ug/L**

<b>Analyte</b>	<b>True</b>		<b>Initial Found</b>			<b>Final Found</b>		
	<b>Sol.A</b>	<b>Sol.AB</b>	<b>Sol.A</b>	<b>Sol.AB</b>	<b>%R</b>	<b>Sol.A</b>	<b>Sol.AB</b>	<b>%R</b>
Antimony	0.0		0.3	0.3				
Silver	0.0	12.5	0.3	12.8	102			

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 5A -

**SPIKE SAMPLE RECOVERY**

<b>Client:</b>	Ash Creek Associates, Inc.	<b>Service Request:</b>	K1211013
<b>Project No.:</b>	1056-03	<b>Units:</b>	MG/KG
<b>Project Name:</b>	NA	<b>Basis:</b>	DRY
<b>Matrix:</b>	SOIL	<b>% Solids:</b>	86.6

Sample Name: WR-191S

Lab Code: K1211013-001S

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Antimony	75 - 125	45.7	1.65	97.04	45.4	N	6020A
Arsenic	78 - 121	41.2	4.42	51.09	72.0	N	6020A
Beryllium	75 - 125	5.280	0.223	5.11	99.0		6020A
Cadmium	75 - 125	5.190	0.126	5.11	99.1		6020A
Chromium	75 - 125	32.3	13.7	20.44	91.0		6020A
Copper	75 - 125	54.7	32.2	25.55	88.1		6020A
Lead	75 - 125	92.9	32.9	51.09	117.4		6020A
Mercury	80 - 120	0.534	0.049	0.51	95.1		7471B
Nickel	75 - 125	62.5	16.9	51.09	89.3		6020A
Selenium	75 - 125	33.5	0.2 U	51.09	65.6	N	6020A
Silver	75 - 125	9.69	0.035	9.70	99.5		6020A
Thallium	75 - 125	53.5	0.040	51.09	104.6		6020A
Zinc	75 - 125	102	64.0	51.09	74.4	N	6020A

An empty field in the Control Limit column indicates the control limit is not applicable

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 5B -

**POST SPIKE SAMPLE RECOVERY**

**Client:** Ash Creek Associates, Inc.      **Service Request:** K1211013

**Project No.:** 1056-03

**Units:** UG/L

**Project Name:** NA

**Basis:** DRY

**Matrix:** WATER

---

**Sample Name:** Batch QC1A      **Lab Code:** K1210997-001A

---

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Mercury	80 - 120	4.84	0.10	5.00	95		7471B

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 5B -

**POST SPIKE SAMPLE RECOVERY**

**Client:** Ash Creek Associates, Inc.      **Service Request:** K1211013  
**Project No.:** 1056-03      **Units:** UG/L  
**Project Name:** NA      **Basis:** DRY  
**Matrix:** WATER

**Sample Name:** WR-191A      **Lab Code:** K1211013-001A

Analyte	Control Limit %R	Spike Result C	Sample Result C	Spike Added	%R	Q	Method
Antimony	80 - 120	53.22	3.41	50.0	100		6020A
Arsenic	80 - 120	59.32	8.65	50.0	101		6020A
Beryllium	80 - 120	51.52	0.44	50.0	102		6020A
Cadmium	80 - 120	51.515	0.247	50.0	103		6020A
Chromium	80 - 120	77.02	26.89	50.0	100		6020A
Copper	80 - 120	107.76	62.94	50.0	90		6020A
Lead	80 - 120	118.04	64.31	50.0	107		6020A
Nickel	80 - 120	80.45	33.14	50.0	95		6020A
Selenium	80 - 120	51.6	0.4	50.0	103		6020A
Silver	80 - 120	9.456	0.073	10.0	94		6020A
Thallium	80 - 120	52.565	0.078	50.0	105		6020A
Zinc	80 - 120	171.3	125.2	50.0	92		6020A

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 6 -****DUPLICATES****Client:** Ash Creek Associates, Inc.      **Service Request:** K1211013**Project No.:** 1056-03      **Units:** MG/KG**Project Name:** NA      **Basis:** DRY**Matrix:** SOIL      **% Solids:** 86.6**Sample Name:** WR-191D**Lab Code:** K1211013-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Antimony	20	1.65		1.69		2.4		6020A
Arsenic	20	4.42		5.79		26.8	*	6020A
Beryllium	20	0.223		0.291		26.5	*	6020A
Cadmium	20	0.126		0.153		19.4		6020A
Chromium	20	13.7		16.2		16.7		6020A
Copper	20	32.2		38.8		18.6		6020A
Lead	20	32.9		44.7		30.4	*	6020A
Mercury		0.049		0.041		17.8		7471B
Nickel	20	16.9		18.4		8.5		6020A
Selenium		0.2	U	0.2	U			6020A
Silver		0.035		0.030		15.4		6020A
Thallium		0.040		0.037		7.8		6020A
Zinc	20	64.0		69.8		8.7		6020A

An empty field in the Control Limit column indicates the control limit is not applicable.

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Metals**

- 7 -

**LABORATORY CONTROL SAMPLE**

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Project Name:** NA

**Aqueous LCS Source:**

**Solid LCS Source:** ERA D076-540

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Antimony				93.3	71.5	25	199	76.6
Arsenic				94.5	98.6	82	117	104.3
Beryllium				57.6	60.2	83	117	104.5
Cadmium				60.5	64.0	83	117	105.8
Chromium				70.4	70.2	82	118	99.7
Copper				79.6	79.8	84	116	100.3
Lead				91.8	97.5	82	118	106.2
Mercury				3.73	3.49	72	128	93.6
Nickel				57.6	59.8	83	117	103.8
Selenium				86.4	95.3	80	120	110.3
Silver				34.4	33.1	66	134	96.2
Thallium				120	127	78	121	105.8
Zinc				140	142	82	118	101.4

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****- 9 -****ICP SERIAL DILUTIONS****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Units:** UG/L**Project Name:** NA**Sample Name:** WR-191L**Lab Code:** K1211013-001L

<b>Analyte</b>	<b>Initial Sample Result (I)</b>	<b>C</b>	<b>Serial Dilution Result (S)</b>	<b>C</b>	<b>% Differ- ence</b>	<b>Q</b>	<b>M</b>
Antimony	3.407		3.354		2		MS
Arsenic	8.65		8.78		2		MS
Beryllium	0.44		0.49		11	E	MS
Cadmium	0.247		0.467		89		MS
Chromium	26.89		24.54		9		MS
Copper	62.94		58.93		6		MS
Lead	64.31		68.64		7		MS
Nickel	33.14		31.90		4		MS
Selenium	0.4 U		2.0 U				MS
Silver	0.073		0.080 U		100.0		MS
Thallium	0.078		0.099 J		27		MS
Zinc	125.2		130.3		4		MS

# COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

## Metals

- 10 -

### DETECTION LIMITS

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Project Name:** NA

---

**ICP/ICP-MS ID #:**

**GFAA ID #:**

**AA ID #:**

---

Analyte	Wave-length (nm)	Back-ground	MRL ug/L	MDL ug/L	M
Mercury	253.7		0.20	0.02	CV

**Comments:**

---

---

# COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

## Metals

- 10 -

### DETECTION LIMITS

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Project Name:** NA

---

**ICP/ICP-MS ID #:** K-ICP-MS-03

**GFAA ID #:**

**AA ID #:**

---

Analyte	Isotope	Back-ground	MRL ug/L	MDL ug/L	M
Arsenic	75		1.0	0.1	MS
Beryllium	9		0.040	0.006	MS
Cadmium	111		0.040	0.006	MS
Chromium	52		0.40	0.06	MS
Copper	65		0.20	0.10	MS
Lead	208		0.10	0.02	MS
Nickel	60		0.40	0.06	MS
Selenium	82		2.0	0.4	MS
Thallium	205		0.040	0.004	MS
Zinc	66		1.0	0.4	MS

**Comments:**

---

---

# COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

## Metals

- 10 -

### DETECTION LIMITS

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Project Name:** NA

---

**ICP/ICP-MS ID #:** K-ICP-MS-02

**GFAA ID #:**

**AA ID #:**

---

Analyte	Isotope	Back-ground	MRL ug/L	MDL ug/L	M
Antimony	123		0.100	0.018	MS
Silver	109		0.040	0.016	MS

**Comments:**

---

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****-12-****ICP LINEAR RANGES (QUARTERLY)**

Client: Ash Creek Associates, Inc.

Service Request: K1211013

Project No.: 1056-03

Project Name: NA

ICP ID Number: K-ICP-MS-03

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Arsenic	15.000	2000	6020A
Beryllium	15.000	2000	6020A
Cadmium	15.000	2000	6020A
Chromium	15.000	2000	6020A
Copper	15.000	2000	6020A
Lead	15.000	2000	6020A
Nickel	15.000	2000	6020A
Selenium	15.000	2000	6020A
Thallium	15.000	2000	6020A
Zinc	15.000	2000	6020A

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****-12-****ICP LINEAR RANGES (QUARTERLY)**

Client: Ash Creek Associates, Inc.

Service Request: K1211013

Project No.: 1056-03

Project Name: NA

ICP ID Number: K-ICP-MS-02

Analyte	Integ. Time (Sec.)	Concentration (ug/L)	Method
Antimony	15.000	900	6020A
Silver	15.000	270	6020A

Comments:

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****-13-****PREPARATION LOG****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**Method:** CV

Sample ID	Preparation Date	Initial Weight (g)	Final Volume(mL)
K1211013-001	11/06/12	0.56	50.0
K1211013-001D	11/06/12	0.56	50.0
K1211013-001S	11/06/12	0.57	50.0
K1211013-MB	11/06/12	0.50	50.0
LCSS	11/06/12	0.25	50.0

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****-13-****PREPARATION LOG****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**Method:** MS

Sample ID	Preparation Date	Initial Weight (g)	Final Volume(mL)
K1211013-001	11/05/12	1.13	100.0
K1211013-001D	11/05/12	1.12	100.0
K1211013-001S	11/05/12	1.13	100.0
K1211013-MB	11/05/12	1.00	100.0
LCSS	11/05/12	1.02	100.0

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

**Metals****-13-****PREPARATION LOG****Client:** Ash Creek Associates, Inc.**Service Request:** K1211013**Project No.:** 1056-03**Project Name:** NA**Method:** MS

Sample ID	Preparation Date	Initial Weight (g)	Final Volume(mL)
K1211013-001	11/07/12	1.19	100.0
K1211013-001D	11/07/12	1.15	100.0
K1211013-001S	11/07/12	1.19	100.0
K1211013-MB	11/07/12	1.00	100.0
LCSS	11/07/12	1.02	100.0

**Metals**

- 14 -

**ANALYSIS RUN LOG**

Client: Ash Creek Associates, Inc.

Service Request: K1211013

Project No.: 1056-03

Run Number: 110812A HG2

Project Name: NA

Instrument ID Number: K-CVAA-02

Method: CV

Start Date: 11/08/12

End Date: 11/08/12

Sample No.	D/F	Time	% R	Analytes																							
				A L	S B	A S	B A	B E	C D	C A	C R	C O	F U	P E	M B	M G	M N	H G	N I	K S	S E	A G	A N	T A	V L	Z C N N	
Calibration Blank	1.0	08:43																		X							
Standard #1	1.0	08:44																		X							
Standard #2	1.0	08:46																		X							
Standard #3	1.0	08:48																		X							
Standard #4	1.0	08:49																		X							
Standard #5	1.0	08:51																		X							
ICV1	1.0	08:53																		X							
ICB1	1.0	08:54																		X							
CRA1	1.0	08:56																		X							
CCV1	1.0	08:57																		X							
CCB1	1.0	08:59																		X							
K1211013-MB	1.0	09:01																		X							
LCSS	5.0	09:02																		X							
ZZZZZZ	1.0	09:04																									
ZZZZZZ	1.0	09:05																									
K1210997-001A	1.0	09:07																		X							
ZZZZZZ	1.0	09:09																									
ZZZZZZ	1.0	09:10																									
ZZZZZZ	1.0	09:12																									
ZZZZZZ	1.0	09:14																									
ZZZZZZ	1.0	09:15																									
CCV2	1.0	09:17																		X							
CCB2	1.0	09:18																		X							
ZZZZZZ	1.0	09:20																									
ZZZZZZ	1.0	09:22																									
ZZZZZZ	1.0	09:23																									
ZZZZZZ	1.0	09:25																									
ZZZZZZ	1.0	09:26																									
ZZZZZZ	1.0	09:28																									
ZZZZZZ	1.0	09:30																									
K1211013-001	1.0	09:31																		X							
K1211013-001D	1.0	09:33																		X							

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

**Metals**

- 14 -

**ANALYSIS RUN LOG**

**Client:** Ash Creek Associates, Inc.

**Service Request:** K1211013

**Project No.:** 1056-03

**Run Number:** 110812A HG2

**Project Name:** NA

**Instrument ID Number:** K-CVAA-02

**Method:** CV

**Start Date:** 11/08/12

**End Date:** 11/08/12

Sample No.	D/F	Time	% R	Analytes																							
				A L	S B	A S	B A	B E	C D	C A	C R	C O	F U	P E	M B	M G	H N	N G	K I	S E	A G	N A	T L	V A	Z L	C N	N N
K1211013-001S	1.0	09:35																	X								
CCV3	1.0	09:36																	X								
CCB3	1.0	09:38																	X								

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

**COLUMBIA ANALYTICAL SERV**  
Now part of the ALS Group

**Metals**

- 14 -

**ANALYSIS RUN LOG**

Client: Ash Creek Associates, Inc.

Service Request: K1211013

Project No.: 1056-03

Run Number: 111312BMS03

Project Name: NA

Instrument ID Number: K-ICP-MS-03

Method: MS

Start Date: 11/13/12

End Date: 11/13/12

Sample No.	D/F	Time	% R	Analytes																							
				A L	S B	A S	B A	B E	C D	C A	C R	C O	C U	F E	P B	M G	M N	H G	N I	K S	S E	A G	N A	T L	V A	Z N	C N
Cal. Blk	1.0	09:55				X		X X		X		X	X							X	X			X	X		
Cal. Stn	1.0	09:59				X		X X		X		X	X							X	X			X	X		
ZZZZZZ	1.0	10:03																									
ICV1	1.0	10:08				X		X X		X		X	X							X	X			X	X		
CCV1	1.0	10:12				X		X X		X		X	X							X	X			X	X		
ICB1	1.0	10:20				X		X X		X		X	X							X	X			X	X		
CCB1	1.0	10:24				X		X X		X		X	X							X	X			X	X		
LLICVS1	1.0	10:28				X		X X		X		X	X							X	X			X	X		
ICS-A1	1.0	10:32				X		X X		X		X	X							X	X			X	X		
ICS-AB1	1.0	10:42				X		X X		X		X	X							X	X			X	X		
K1211013-MB	5.0	10:53				X		X X		X		X	X							X	X			X	X		
LCSS	20.0	10:59				X		X X		X		X	X							X	X			X	X		
K1211013-001	5.0	11:04				X		X X		X		X	X							X	X			X	X		
K1211013-001D	5.0	11:08				X		X X		X		X	X							X	X			X	X		
K1211013-001L	25.0	11:12				X		X X		X		X	X							X	X			X	X		
K1211013-001A	5.0	11:16				X		X X		X		X	X							X	X			X	X		
K1211013-001S	5.0	11:22				X		X X		X		X	X							X	X			X	X		
ZZZZZZ	5.0	11:27																									
ZZZZZZ	5.0	11:33																									
ZZZZZZ	1.0	11:37																									
CCV2	1.0	11:42				X		X X		X		X	X							X	X			X	X		
CCB2	1.0	11:48				X		X X		X		X	X							X	X			X	X		
ZZZZZZ	1.0	11:52																									
LLCCVS1	1.0	11:59				X		X X		X		X	X							X	X			X	X		

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

**Metals**

- 14 -

**ANALYSIS RUN LOG**

Client: Ash Creek Associates, Inc.

Service Request: K1211013

Project No.: 1056-03

Run Number: 110912BMS02

Project Name: NA

Instrument ID Number: K-ICP-MS-02

Method: MS

Start Date: 11/09/12

End Date: 11/09/12

Sample No.	D/F	Time	% R	Analytes																								
				A L	S B	A S	B A	B E	C D	C A	C R	C O	F U	P E	M B	M G	H N	N G	I I	K S	S E	A G	A A	T L	V A	Z N	C N	
Cal. Blk	1.0	10:05		X																							X	
Cal. Stn	1.0	10:08			X																						X	
ICV1	1.0	10:11				X																					X	
CCV1	1.0	10:15				X																					X	
ICB1	1.0	10:24				X																					X	
CCB1	1.0	10:26				X																					X	
LLICV1	1.0	10:28				X																					X	
ICS-A1	1.0	10:32				X																					X	
ICS-AB1	1.0	10:35				X																					X	
ZZZZZZ	5.0	10:39																										
ZZZZZZ	20.0	10:42																										
ZZZZZZ	20.0	10:46																										
ZZZZZZ	20.0	10:49																										
ZZZZZZ	1.0	10:52																										
CCV2	1.0	10:56				X																					X	
CCB2	1.0	11:10				X																					X	
LLCCVS1	1.0	11:12				X																					X	
ZZZZZZ	1.0	11:20																										
ZZZZZZ	5.0	11:26																										
ZZZZZZ	1.0	11:28																										
ZZZZZZ	5.0	11:34																										
ZZZZZZ	5.0	11:37																										
ZZZZZZ	25.0	11:41																										
ZZZZZZ	5.0	11:44																										
ZZZZZZ	5.0	11:49																										
ZZZZZZ	5.0	11:53																										
ZZZZZZ	5.0	11:57																										
ZZZZZZ	5.0	12:00																										
CCV3	1.0	12:03				X																					X	
CCB3	1.0	12:09				X																					X	
ZZZZZZ	5.0	12:11																										
ZZZZZZ	5.0	12:14																										

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

**COLUMBIA ANALYTICAL SERV**  
Now part of the ALS Group

**Metals**

- 14 -

**ANALYSIS RUN LOG**

Client: Ash Creek Associates, Inc.

Service Request: K1211013

Project No.: 1056-03

Run Number: 110912BMS02

Project Name: NA

Instrument ID Number: K-ICP-MS-02

Method: MS

Start Date: 11/09/12

End Date: 11/09/12

Sample No.	D/F	Time	% R	Analytes																								
				A L	S B	A S	B A	B E	C D	C A	C R	C O	F U	P E	M B	M G	H N	N G	I I	K S	S E	A G	A G	T A	V L	Z N	C N	
ZZZZZZ	5.0	12:18																										
ZZZZZZ	5.0	12:21																										
ZZZZZZ	5.0	12:25																										
ZZZZZZ	5.0	12:28																										
ZZZZZZ	5.0	12:32																										
ZZZZZZ	5.0	12:35																										
ZZZZZZ	1.0	12:37																										
CCV4	1.0	12:40						X																				X
CCB4	1.0	12:45					X																					X
LLCCVS2	1.0	12:48				X																						X
ZZZZZZ	5.0	12:51																										
ZZZZZZ	5.0	12:54																										
ZZZZZZ	2.0	12:57																										
ZZZZZZ	5.0	13:00																										
ZZZZZZ	5.0	13:03																										
K1211013-MB	5.0	13:07				X																						X
LCSS	20.0	13:10				X																						X
K1211013-001	5.0	13:15				X																						X
K1211013-001D	5.0	13:18				X																						X
K1211013-001L	25.0	13:21				X																						X
CCV5	1.0	13:24				X																						X
CCB5	1.0	13:28				X																						X
K1211013-001A	5.0	13:31				X																						X
K1211013-001S	5.0	13:35				X																						X
CCV6	1.0	13:40				X																						X
CCB6	1.0	13:45				X																						X
LLCCVS3	1.0	13:47				X																						X

\* - Denotes additional elements (other than the standard CLP elements) are represented on another Form 14

**Metals**

**15-IN**

**ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY**

Lab Name: COLUMBIA ANALYTICAL SERVICES, INC Contract: 1056-03  
 Lab Code: CASK Case No.: \_\_\_\_\_ NRAS No.: \_\_\_\_\_ SDG NO.: K1211013  
 ICP-MS Instrument ID: K-ICP-MS-03 Start Date: 11/13/2012 End Date: 11/13/2012

Sample No.	Client ID	Time	Internal Standards %RI For:								Element	Q
			Element Li_6	Q	Element Rh_103	Q	Element In_115	Q	Element Lu_175	Q		
Cal. Blk	Cal. Blk	0955	100		100		100		100			
Cal. Stn	Cal. Stn	0959	101		99		100		101			
ZZZZZZ	ZZZZZZ	1003										
ICV1	ICV1	1008	100		99		100		100			
CCV1	CCV1	1012	99		97		98		99			
ICB1	ICB1	1020	101		98		99		99			
CCB1	CCB1	1024	101		98		100		100			
LLICVS1	LLICVS1	1028	102		99		100		100			
ICS-A1	ICSA	1032	88		83		88		94			
ICS-AB1	ICSAB	1042	86		81		86		92			
K1211013-MB	Method Blank	1053	92		90		93		96			
LCSS	LCSS	1059	94		91		94		97			
K1211013-001	WR-191	1104	89		84		87		93			
K1211013-001D	WR-191D	1108	82		78		82		91			
K1211013-001L	WR-191L	1112	77		73		77		86			
K1211013-001A	WR-191A	1116	77		73		80		88			
K1211013-001S	WR-191S	1122	77		72		77		87			
ZZZZZZ	ZZZZZZ	1127										
ZZZZZZ	ZZZZZZ	1133										
ZZZZZZ	ZZZZZZ	1137										
CCV2	CCV2	1142	75		71		74		84			
CCB2	CCB2	1148	75		71		76		84			
ZZZZZZ	ZZZZZZ	1152										
LLCCVS1	LLCCVS1	1159	93		80		84		92			

## Metals

15-IN

## ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Lab Name: COLUMBIA ANALYTICAL SERVICES, INC Contract: 1056-03  
 Lab Code: CASK Case No.: \_\_\_\_\_ NRAS No.: \_\_\_\_\_ SDG NO.: K1211013  
 ICP-MS Instrument ID: K-ICP-MS-02 Start Date: 11/09/2012 End Date: 11/09/2012

Sample No.	Client ID	Time	Internal Standards %RI For:							
			Element Rh_103	Element Q	Element In_115	Element Q	Element Q	Element Q	Element Q	Element Q
Cal. Blk	Cal. Blk	1005	100		100					
Cal. Stn	Cal. Stn	1008	104		105					
ICV1	ICV1 HCL	1011	102		105					
CCV1	CCV1	1015	102		105					
ICB1	ICB1	1024	100		102					
CCB1	CCB1	1026	100		101					
LLICV1	LLICV1	1028	100		102					
ICS-A1	ICSA	1032	83		89					
ICS-AB1	ICSAB	1035	85		91					
ZZZZZZ	ZZZZZZ	1039								
ZZZZZZ	ZZZZZZ	1042								
ZZZZZZ	ZZZZZZ	1046								
ZZZZZZ	ZZZZZZ	1049								
ZZZZZZ	ZZZZZZ	1052								
CCV2	CCV2	1056	105		108					
CCB2	CCB2	1110	103		105					
LLCCVS1	LLCCVS1	1112	104		106					
ZZZZZZ	ZZZZZZ	1120								
ZZZZZZ	ZZZZZZ	1126								
ZZZZZZ	ZZZZZZ	1128								
ZZZZZZ	ZZZZZZ	1134								
ZZZZZZ	ZZZZZZ	1137								
ZZZZZZ	ZZZZZZ	1141								
ZZZZZZ	ZZZZZZ	1144								
ZZZZZZ	ZZZZZZ	1149								
ZZZZZZ	ZZZZZZ	1153								
ZZZZZZ	ZZZZZZ	1157								
ZZZZZZ	ZZZZZZ	1200								
CCV3	CCV3	1203	105		108					
CCB3	CCB3	1209	102		103					
ZZZZZZ	ZZZZZZ	1211								
ZZZZZZ	ZZZZZZ	1214								
ZZZZZZ	ZZZZZZ	1218								
ZZZZZZ	ZZZZZZ	1221								
ZZZZZZ	ZZZZZZ	1225								
ZZZZZZ	ZZZZZZ	1228								
ZZZZZZ	ZZZZZZ	1232								
ZZZZZZ	ZZZZZZ	1235								
ZZZZZZ	ZZZZZZ	1237								
CCV4	CCV4	1240	100		104					
CCB4	CCB4	1245	97		101					
LLCCVS2	LLCCVS2	1248	98		102					
ZZZZZZ	ZZZZZZ	1251								
ZZZZZZ	ZZZZZZ	1254								

**Metals****15-IN****ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY**

Lab Name: COLUMBIA ANALYTICAL SERVICES, INC Contract: 1056-03  
 Lab Code: CASK Case No.: \_\_\_\_\_ NRAS No.: \_\_\_\_\_ SDG NO.: K1211013  
 ICP-MS Instrument ID: K-ICP-MS-02 Start Date: 11/09/2012 End Date: 11/09/2012

Sample No.	Client ID	Time	Internal Standards %RI For:							
			Element Rh_103	Element Q	Element In_115	Element Q	Element Q	Element Q	Element Q	Element Q
ZZZZZZ	ZZZZZZ	1257								
ZZZZZZ	ZZZZZZ	1300								
ZZZZZZ	ZZZZZZ	1303								
K1211013-MB	Method Blank	1307	97		102					
LCSS	LCSS	1310	99		107					
K1211013-001	WR-191	1315	82		89					
K1211013-001D	WR-191D	1318	83		90					
K1211013-001L	WR-191L	1321	92		98					
CCV5	CCV5	1324	98		102					
CCB5	CCB5	1328	98		101					
K1211013-001A	WR-191A	1331	83		92					
K1211013-001S	WR-191S	1335	79		87					
CCV6	CCV6	1340	96		100					
CCB6	CCB6	1345	94		98					
LLCCVS3	LLCCVS3	1347	95		99					

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Client:** Ash Creek Associates, Inc.                           **Service Request:** K1211013  
**Project:** 1056-03

**Cover Page - Organic Analysis Data Package**  
**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>
WR-191	K1211013-001	10/31/2012	11/01/2012
WR-191MS	KWG1213413-1	10/31/2012	11/01/2012
WR-191DMS	KWG1213413-2	10/31/2012	11/01/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** 10/31/2012  
**Date Received:** 11/01/2012

**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	WR-191	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	K1211013-001	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1221	ND U	0.20	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1232	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1242	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1248	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1254	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1260	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1262	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1268	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	102	50-123	11/11/12	Acceptable

**Comments:** \_\_\_\_\_

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** NA  
**Date Received:** NA

**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	Method Blank	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	KWG1213413-4	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1221	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1232	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1242	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1248	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1254	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1260	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1262	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1268	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	97	50-123	11/11/12	Acceptable

**Comments:** \_\_\_\_\_

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013**Surrogate Recovery Summary  
Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8082A

**Units:** PERCENT  
**Level:** Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR-191	K1211013-001	102
Method Blank	KWG1213413-4	97
WR-191MS	KWG1213413-1	102
WR-191DMS	KWG1213413-2	102
Lab Control Sample	KWG1213413-3	106

**Surrogate Recovery Control Limits (%)**

---

Sur1 = Decachlorobiphenyl 50-123

---

---

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	WR-191	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	K1211013-001	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A	<b>Extraction Lot:</b>	KWG1213413

Analyte Name	Sample Result	WR-191MS			WR-191DMS			%Rec Limits	RPD	RPD Limit			
		KGW1213413-1			KGW1213413-2								
		Matrix Spike			Duplicate Matrix Spike								
Analyte Name	Sample Result	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec						
Aroclor 1016	ND	0.964	0.977	99	0.929	0.981	95	27-128	4	40			
Aroclor 1260	ND	0.992	0.977	102	0.916	0.981	93	29-131	8	40			

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012

**Lab Control Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8082A

**Units:** mg/Kg  
**Basis:** Dry

**Level:** Low

**Extraction Lot:** KWG1213413

Lab Control Sample

KWG1213413-3

**Lab Control Spike**

<b>Analyte Name</b>	<b>Result</b>	<b>Spike</b>	<b>%Rec</b>	<b>%Rec</b> Limits
		Amount		
Aroclor 1016	0.972	1.00	97	37-121
Aroclor 1260	1.04	1.00	104	42-123

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012  
**Time Analyzed:** 12:08

**Method Blank Summary**  
**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	Method Blank	<b>Instrument ID:</b>	GC32.i
<b>Lab Code:</b>	KWG1213413-4	<b>File ID:</b>	J:\GC32\DATA\111012.B\1110F050.D
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A	<b>Extraction Lot:</b>	KWG1213413

This Method Blank applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
WR-191	K1211013-001	J:\GC32\DATA\111012.B\1110F043.D	11/11/12	08:41
WR-191MS	KWG1213413-1	J:\GC32\DATA\111012.B\1110F044.D	11/11/12	09:11
WR-191DMS	KWG1213413-2	J:\GC32\DATA\111012.B\1110F045.D	11/11/12	09:40
Lab Control Sample	KWG1213413-3	J:\GC32\DATA\111012.B\1110F049.D	11/11/12	11:39

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012  
**Time Analyzed:** 11:39

**Lab Control Sample Summary  
Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	Lab Control Sample	<b>Instrument ID:</b>	GC32.i
<b>Lab Code:</b>	KWG1213413-3	<b>File ID:</b>	J:\GC32\DATA\111012.B\1110F049.D
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A	<b>Extraction Lot:</b>	KWG1213413

This Lab Control Sample applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
WR-191	K1211013-001	J:\GC32\DATA\111012.B\1110F043.D	11/11/12	08:41
WR-191MS	KWG1213413-1	J:\GC32\DATA\111012.B\1110F044.D	11/11/12	09:11
WR-191DMS	KWG1213413-2	J:\GC32\DATA\111012.B\1110F045.D	11/11/12	09:40
Method Blank	KWG1213413-4	J:\GC32\DATA\111012.B\1110F050.D	11/11/12	12:08

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-35MS

Level ID	File ID	Level ID	File ID
A	\cash1\acqudata\GC32\Data\081712.b\0817F003.D	Q	\cash1\acqudata\GC32\Data\081712.b\0817F019.D
B	\cash1\acqudata\GC32\Data\081712.b\0817F004.D	R	\cash1\acqudata\GC32\Data\081712.b\0817F020.D
C	\cash1\acqudata\GC32\Data\081712.b\0817F005.D	S	\cash1\acqudata\GC32\Data\081712.b\0817F021.D
D	\cash1\acqudata\GC32\Data\081712.b\0817F006.D	T	\cash1\acqudata\GC32\Data\081712.b\0817F022.D
E	\cash1\acqudata\GC32\Data\081712.b\0817F007.D	U	\cash1\acqudata\GC32\Data\081712.b\0817F023.D
F	\cash1\acqudata\GC32\Data\081712.b\0817F008.D	V	\cash1\acqudata\GC32\Data\081712.b\0817F024.D
G	\cash1\acqudata\GC32\Data\081712.b\0817F009.D	W	\cash1\acqudata\GC32\Data\081712.b\0817F025.D
H	\cash1\acqudata\GC32\Data\081712.b\0817F010.D	X	\cash1\acqudata\GC32\Data\081712.b\0817F026.D
I	\cash1\acqudata\GC32\Data\081712.b\0817F011.D	Y	\cash1\acqudata\GC32\Data\081712.b\0817F027.D
J	\cash1\acqudata\GC32\Data\081712.b\0817F012.D	Z	\cash1\acqudata\GC32\Data\081712.b\0817F028.D
K	\cash1\acqudata\GC32\Data\081712.b\0817F013.D	AA	\cash1\acqudata\GC32\Data\081712.b\0817F029.D
L	\cash1\acqudata\GC32\Data\081712.b\0817F014.D	AB	\cash1\acqudata\GC32\Data\081712.b\0817F030.D
M	\cash1\acqudata\GC32\Data\081712.b\0817F015.D	AC	\cash1\acqudata\GC32\Data\081712.b\0817F031.D
N	\cash1\acqudata\GC32\Data\081712.b\0817F016.D	AD	\cash1\acqudata\GC32\Data\081712.b\0817F032.D
O	\cash1\acqudata\GC32\Data\081712.b\0817F017.D		
P	\cash1\acqudata\GC32\Data\081712.b\0817F018.D		

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Decachlorobiphenyl	A	2.5	90000	B	5.0	88100	C	50	85800	D	100	85000	E	200	79000
	F	500	79100												
Aroclor 1016 {1}	A	25	1280	B	50	1210	C	500	1410	D	1000	1390	E	2000	1250
	F	5000	1160												
Aroclor 1016 {2}	A	25	4020	B	50	4210	C	500	4230	D	1000	4140	E	2000	3790
	F	5000	3710												
Aroclor 1016 {3}	A	25	2880	B	50	2750	C	500	2970	D	1000	2870	E	2000	2600
	F	5000	2500												
Aroclor 1016 {4}	A	25	1490	B	50	1520	C	500	1750	D	1000	1730	E	2000	1580
	F	5000	1540												
Aroclor 1016 {5}	A	25	2260	B	50	2230	C	500	2410	D	1000	2340	E	2000	2080
	F	5000	1970												
Aroclor 1260 {1}	A	25	5360	B	50	5000	C	500	5020	D	1000	4870	E	2000	4390
	F	5000	4270												
Aroclor 1260 {2}	A	25	6750	B	50	6240	C	500	6160	D	1000	6040	E	2000	5500
	F	5000	5380												
Aroclor 1260 {3}	A	25	6060	B	50	5410	C	500	5770	D	1000	5620	E	2000	5170
	F	5000	5190												
Aroclor 1260 {4}	A	25	4280	B	50	4140	C	500	4290	D	1000	4200	E	2000	3840
	F	5000	3760												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-35MS

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Aroclor 1260 {5}	A	25	9740	B	50	9290	C	500	9440	D	1000	9520	E	2000	8950
	F	5000	9130												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-35MS

<b>Analyte Name</b>	<b>Compound Type</b>	<b>Calibration Evaluation</b>				
		<b>Fit Type</b>	<b>Eval.</b>	<b>Eval. Result</b>	<b>Q</b>	<b>Control Criteria</b>
Decachlorobiphenyl	SURR	AverageRF	% RSD	5.4		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	7.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	5.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	6.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	6.8		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	7.4		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	8.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	8.4		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	6.2		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.6		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	3.1		≤ 20

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012  
**Date Analyzed:** 08/18/2012

**Second Source Calibration Verification**  
**Polychlorinated Biphenyls (PCBs)**

<b>Calibration Type:</b>	External Standard	<b>Calibration ID:</b>	CAL11797
<b>Analysis Method:</b>	8082A	<b>Units:</b>	ng/mL
<b>File ID:</b>	\cash1\acquidata\GC32\Data\081712.b\0817F033.D \cash1\acquidata\GC32\Data\081712.b\0817F034.D \cash1\acquidata\GC32\Data\081712.b\0817F035.D \cash1\acquidata\GC32\Data\081712.b\0817F036.D \cash1\acquidata\GC32\Data\081712.b\0817F037.D \cash1\acquidata\GC32\Data\081712.b\0817F038.D \cash1\acquidata\GC32\Data\081712.b\0817F039.D \cash1\acquidata\GC32\Data\081712.b\0817F040.D \cash1\acquidata\GC32\Data\081712.b\0817F041.D	<b>Column ID:</b>	DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016	1000	1100	NA	NA	NA	10	$\pm 20\%$	NA
Aroclor 1016 {1}	1000	1100	1290	1430	11	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {2}	1000	1100	4020	4540	13	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {3}	1000	1100	2760	2970	7	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {4}	1000	1100	1600	1800	12	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {5}	1000	1100	2220	2340	5	NA	$\pm 100\%$	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	3	$\pm 20\%$	NA
Aroclor 1260 {1}	1000	990	4820	4790	-1	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {2}	1000	980	6010	5880	-2	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {3}	1000	890	5540	4930	-11	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {4}	1000	1200	4090	4780	17	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {5}	1000	1100	9350	10600	13	NA	$\pm 100\%$	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-XLB

Level ID	File ID	Level ID	File ID
A	\cash1\acqudata\GC32\Data\081712_r.b\0817F003.D	Q	\cash1\acqudata\GC32\Data\081712_r.b\0817F019.D
B	\cash1\acqudata\GC32\Data\081712_r.b\0817F004.D	R	\cash1\acqudata\GC32\Data\081712_r.b\0817F020.D
C	\cash1\acqudata\GC32\Data\081712_r.b\0817F005.D	S	\cash1\acqudata\GC32\Data\081712_r.b\0817F021.D
D	\cash1\acqudata\GC32\Data\081712_r.b\0817F006.D	T	\cash1\acqudata\GC32\Data\081712_r.b\0817F022.D
E	\cash1\acqudata\GC32\Data\081712_r.b\0817F007.D	U	\cash1\acqudata\GC32\Data\081712_r.b\0817F023.D
F	\cash1\acqudata\GC32\Data\081712_r.b\0817F008.D	V	\cash1\acqudata\GC32\Data\081712_r.b\0817F024.D
G	\cash1\acqudata\GC32\Data\081712_r.b\0817F009.D	W	\cash1\acqudata\GC32\Data\081712_r.b\0817F025.D
H	\cash1\acqudata\GC32\Data\081712_r.b\0817F010.D	X	\cash1\acqudata\GC32\Data\081712_r.b\0817F026.D
I	\cash1\acqudata\GC32\Data\081712_r.b\0817F011.D	Y	\cash1\acqudata\GC32\Data\081712_r.b\0817F027.D
J	\cash1\acqudata\GC32\Data\081712_r.b\0817F012.D	Z	\cash1\acqudata\GC32\Data\081712_r.b\0817F028.D
K	\cash1\acqudata\GC32\Data\081712_r.b\0817F013.D	AA	\cash1\acqudata\GC32\Data\081712_r.b\0817F029.D
L	\cash1\acqudata\GC32\Data\081712_r.b\0817F014.D	AB	\cash1\acqudata\GC32\Data\081712_r.b\0817F030.D
M	\cash1\acqudata\GC32\Data\081712_r.b\0817F015.D	AC	\cash1\acqudata\GC32\Data\081712_r.b\0817F031.D
N	\cash1\acqudata\GC32\Data\081712_r.b\0817F016.D	AD	\cash1\acqudata\GC32\Data\081712_r.b\0817F032.D
O	\cash1\acqudata\GC32\Data\081712_r.b\0817F017.D		
P	\cash1\acqudata\GC32\Data\081712_r.b\0817F018.D		

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.15E+5	B	5.0	1.06E+5	C	50	1.01E+5	D	100	98300	E	200	87700
	F	500	83200												
Aroclor 1016 {1}	A	25	2830	B	50	2960	C	500	2830	D	1000	2670	E	2000	2350
	F	5000	2160												
Aroclor 1016 {2}	A	25	5050	B	50	4860	C	500	4860	D	1000	4680	E	2000	4250
	F	5000	4090												
Aroclor 1016 {3}	A	25	2810	B	50	2750	C	500	2760	D	1000	2640	E	2000	2380
	F	5000	2240												
Aroclor 1016 {4}	A	25	2390	B	50	2420	C	500	2350	D	1000	2200	E	2000	1940
	F	5000	1760												
Aroclor 1016 {5}	A	25	2800	B	50	2620	C	500	2590	D	1000	2450	E	2000	2160
	F	5000	1980												
Aroclor 1260 {1}	A	25	7030	B	50	6570	C	500	5780	D	1000	5500	E	2000	4870
	F	5000	4570												
Aroclor 1260 {2}	A	25	8200	B	50	7900	C	500	7110	D	1000	6760	E	2000	6010
	F	5000	5680												
Aroclor 1260 {3}	A	25	9260	B	50	9070	C	500	8360	D	1000	8000	E	2000	7220
	F	5000	6900												
Aroclor 1260 {4}	A	25	4810	B	50	5080	C	500	4690	D	1000	4460	E	2000	3950
	F	5000	3690												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-XLB

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Aroclor 1260 {5}	A	25	12000	B	50	12200	C	500	10800	D	1000	10500	E	2000	9590
	F	5000	9420												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-XLB

<b>Analyte Name</b>	<b>Compound Type</b>	<b>Calibration Evaluation</b>				
		<b>Fit Type</b>	<b>Eval.</b>	<b>Eval. Result</b>	<b>Q</b>	<b>Control Criteria</b>
Decachlorobiphenyl	SURR	AverageRF	% RSD	11.9		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	11.9		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	8.2		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.0		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	12.3		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.6		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	16.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	11.8		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	11.9		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.8		≤ 20

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012  
**Date Analyzed:** 08/18/2012

**Second Source Calibration Verification**  
**Polychlorinated Biphenyls (PCBs)**

<b>Calibration Type:</b>	External Standard	<b>Calibration ID:</b>	CAL11797
<b>Analysis Method:</b>	8082A	<b>Units:</b>	ng/mL
<b>File ID:</b>	\cash1\acquidata\GC32\Data\081712_r.b\0817F033.D \cash1\acquidata\GC32\Data\081712_r.b\0817F034.D \cash1\acquidata\GC32\Data\081712_r.b\0817F035.D \cash1\acquidata\GC32\Data\081712_r.b\0817F036.D \cash1\acquidata\GC32\Data\081712_r.b\0817F037.D \cash1\acquidata\GC32\Data\081712_r.b\0817F038.D \cash1\acquidata\GC32\Data\081712_r.b\0817F039.D \cash1\acquidata\GC32\Data\081712_r.b\0817F040.D \cash1\acquidata\GC32\Data\081712_r.b\0817F041.D		
		<b>Column ID:</b>	DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016	1000	1000	NA	NA	NA	5	$\pm 20\%$	NA
Aroclor 1016 {1}	1000	1100	2630	2810	7	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {2}	1000	1000	4630	4770	3	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {3}	1000	1100	2600	2790	7	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {4}	1000	1000	2180	2240	3	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {5}	1000	1000	2430	2550	5	NA	$\pm 100\%$	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	4	$\pm 20\%$	NA
Aroclor 1260 {1}	1000	970	5720	5540	-3	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {2}	1000	970	6940	6760	-3	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {3}	1000	920	8140	7510	-8	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {4}	1000	1200	4450	5320	20	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {5}	1000	1100	10800	12000	12	NA	$\pm 100\%$	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012.B\1110F041.D**Column ID:** DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	100	110	84500	94800	12	NA	± 20 %	AverageRF
Aroclor 1016	1000	1100	NA	NA	NA	14	± 20 %	NA
Aroclor 1016 {1}	1000	1100	1290	1470	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	1100	4020	4580	14	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2760	3100	12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	1200	1600	1880	17	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	1100	2220	2460	11	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	8	± 20 %	NA
Aroclor 1260 {1}	1000	1100	4820	5110	6	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	6010	6400	6	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	5540	5970	8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	4090	4500	10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	9350	10100	9	NA	± 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012\_R.B\1110F041.D**Column ID:** DB-XLB

<b>Analyte Name</b>	<b>Expected</b>	<b>Result</b>	<b>Average</b>	<b>CCV</b>	<b>%D</b>	<b>%Drift</b>	<b>Criteria</b>	<b>Curve Fit</b>
			<b>RF</b>	<b>RF</b>				
Decachlorobiphenyl	100	110	98600	108000	9	NA	$\pm 20\%$	AverageRF
Aroclor 1016	1000	1100	NA	NA	NA	10	$\pm 20\%$	NA
Aroclor 1016 {1}	1000	1100	2630	2900	10	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {2}	1000	1100	4630	5050	9	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {3}	1000	1100	2600	2890	11	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {4}	1000	1100	2180	2390	10	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {5}	1000	1100	2430	2650	9	NA	$\pm 100\%$	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	5	$\pm 20\%$	NA
Aroclor 1260 {1}	1000	1000	5720	5920	4	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {2}	1000	1000	6940	7260	5	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {3}	1000	1100	8140	8650	6	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {4}	1000	1100	4450	4800	8	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {5}	1000	1000	10800	11200	4	NA	$\pm 100\%$	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012.B\1110F051.D**Column ID:** DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	100	120	84500	97500	15	NA	± 20 %	AverageRF
Aroclor 1016	1000	1200	NA	NA	NA	16	± 20 %	NA
Aroclor 1016 {1}	1000	1200	1290	1500	17	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	1200	4020	4690	17	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2760	3140	14	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	1200	1600	1910	19	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	1100	2220	2530	14	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	10	± 20 %	NA
Aroclor 1260 {1}	1000	1100	4820	5210	8	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	6010	6470	8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	5540	6060	9	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	4090	4590	12	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	9350	10300	10	NA	± 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012\_R.B\1110F051.D**Column ID:** DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	100	110	98600	109000	11	NA	± 20 %	AverageRF
Aroclor 1016	1000	1100	NA	NA	NA	12	± 20 %	NA
Aroclor 1016 {1}	1000	1100	2630	2970	13	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	1100	4630	5100	10	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2600	2930	13	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	1100	2180	2420	11	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	1100	2430	2690	11	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	7	± 20 %	NA
Aroclor 1260 {1}	1000	1000	5720	5990	5	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	6940	7350	6	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	8140	8800	8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	4450	4900	10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	10800	11500	7	NA	± 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

## COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013

**Analysis Run Log**  
**Polychlorinated Biphenyls (PCBs)**

**Analysis Method:** 8082A**Analysis Lot:** KWG1213410**Instrument ID:** GC32.i**Column:** DB-35MS

<b>File ID</b>	<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Analysis Started</b>	<b>Start Time</b>	<b>Q</b>	<b>Date Analysis Finished</b>	<b>Finish Time</b>
1110F002.D	Continuing Calibration Verification	KWG1213410-1	11/10/2012	12:27		11/10/2012	12:27
1110F003.D	Instrument Blank	KWG1213410-2	11/10/2012	12:57		11/10/2012	12:57
1110F004.D	ZZZZZZ	ZZZZZZ	11/10/2012	13:26		11/10/2012	13:26
1110F005.D	ZZZZZZ	ZZZZZZ	11/10/2012	13:56		11/10/2012	13:56
1110F006.D	ZZZZZZ	ZZZZZZ	11/10/2012	14:25		11/10/2012	14:25
1110F007.D	ZZZZZZ	ZZZZZZ	11/10/2012	14:55		11/10/2012	14:55
1110F008.D	ZZZZZZ	ZZZZZZ	11/10/2012	15:25		11/10/2012	15:25
1110F009.D	ZZZZZZ	ZZZZZZ	11/10/2012	15:54		11/10/2012	15:54
1110F010.D	ZZZZZZ	ZZZZZZ	11/10/2012	16:24		11/10/2012	16:24
1110F011.D	ZZZZZZ	ZZZZZZ	11/10/2012	16:53		11/10/2012	16:53
1110F012.D	ZZZZZZ	ZZZZZZ	11/10/2012	17:23		11/10/2012	17:23
1110F013.D	ZZZZZZ	ZZZZZZ	11/10/2012	17:53		11/10/2012	17:53
1110F014.D	Continuing Calibration Verification	KWG1213410-3	11/10/2012	18:22		11/10/2012	18:22
1110F015.D	Instrument Blank	KWG1213410-4	11/10/2012	18:52		11/10/2012	18:52
1110F016.D	ZZZZZZ	ZZZZZZ	11/10/2012	19:21		11/10/2012	19:21
1110F017.D	ZZZZZZ	ZZZZZZ	11/10/2012	19:51		11/10/2012	19:51
1110F018.D	ZZZZZZ	ZZZZZZ	11/10/2012	20:21		11/10/2012	20:21
1110F019.D	ZZZZZZ	ZZZZZZ	11/10/2012	20:50		11/10/2012	20:50
1110F020.D	ZZZZZZ	ZZZZZZ	11/10/2012	21:20		11/10/2012	21:20
1110F021.D	ZZZZZZ	ZZZZZZ	11/10/2012	21:50		11/10/2012	21:50
1110F022.D	ZZZZZZ	ZZZZZZ	11/10/2012	22:19		11/10/2012	22:19
1110F023.D	ZZZZZZ	ZZZZZZ	11/10/2012	22:49		11/10/2012	22:49
1110F024.D	ZZZZZZ	ZZZZZZ	11/10/2012	23:18		11/10/2012	23:18
1110F025.D	ZZZZZZ	ZZZZZZ	11/10/2012	23:48		11/10/2012	23:48
1110F026.D	Continuing Calibration Verification	KWG1213410-5	11/11/2012	00:18		11/11/2012	00:18
1110F027.D	Instrument Blank	KWG1213410-6	11/11/2012	00:47		11/11/2012	00:47
1110F028.D	ZZZZZZ	ZZZZZZ	11/11/2012	01:17		11/11/2012	01:17
1110F029.D	ZZZZZZ	ZZZZZZ	11/11/2012	01:47		11/11/2012	01:47
1110F030.D	ZZZZZZ	ZZZZZZ	11/11/2012	02:16		11/11/2012	02:16
1110F031.D	ZZZZZZ	ZZZZZZ	11/11/2012	02:46		11/11/2012	02:46
1110F032.D	ZZZZZZ	ZZZZZZ	11/11/2012	03:15		11/11/2012	03:15
1110F033.D	ZZZZZZ	ZZZZZZ	11/11/2012	03:45		11/11/2012	03:45
1110F034.D	ZZZZZZ	ZZZZZZ	11/11/2012	04:15		11/11/2012	04:15
1110F035.D	ZZZZZZ	ZZZZZZ	11/11/2012	04:44		11/11/2012	04:44

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013

**Analysis Run Log**  
**Polychlorinated Biphenyls (PCBs)**

**Analysis Method:** 8082A**Analysis Lot:** KWG1213410**Instrument ID:** GC32.i**Column:** DB-35MS

<b>File ID</b>	<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Analysis Started</b>	<b>Start Time</b>	<b>Q</b>	<b>Date Analysis Finished</b>	<b>Finish Time</b>
1110F036.D	ZZZZZZ	ZZZZZZ	11/11/2012	05:14		11/11/2012	05:14
1110F037.D	ZZZZZZ	ZZZZZZ	11/11/2012	05:43		11/11/2012	05:43
1110F038.D	ZZZZZZ	ZZZZZZ	11/11/2012	06:13		11/11/2012	06:13
1110F039.D	ZZZZZZ	ZZZZZZ	11/11/2012	06:43		11/11/2012	06:43
1110F040.D	ZZZZZZ	ZZZZZZ	11/11/2012	07:12		11/11/2012	07:12
1110F041.D	Continuing Calibration Verification	KWG1213410-7	11/11/2012	07:42		11/11/2012	07:42
1110F042.D	Instrument Blank	KWG1213410-8	11/11/2012	08:11		11/11/2012	08:11
1110F043.D	WR-191	K1211013-001	11/11/2012	08:41		11/11/2012	08:41
1110F044.D	WR-191MS	KWG1213413-1	11/11/2012	09:11		11/11/2012	09:11
1110F045.D	WR-191DMS	KWG1213413-2	11/11/2012	09:40		11/11/2012	09:40
1110F046.D	ZZZZZZ	ZZZZZZ	11/11/2012	10:10		11/11/2012	10:10
1110F047.D	ZZZZZZ	ZZZZZZ	11/11/2012	10:40		11/11/2012	10:40
1110F048.D	ZZZZZZ	ZZZZZZ	11/11/2012	11:09		11/11/2012	11:09
1110F049.D	Lab Control Sample	KWG1213413-3	11/11/2012	11:39		11/11/2012	11:39
1110F050.D	Method Blank	KWG1213413-4	11/11/2012	12:08		11/11/2012	12:08
1110F051.D	Continuing Calibration Verification	KWG1213410-9	11/11/2012	12:38		11/11/2012	12:38
1110F052.D	Instrument Blank	KWG1213410-10	11/11/2012	13:08		11/11/2012	13:08

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013**Date Extracted:** 11/06/2012

**Extraction Prep Log**  
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8082A

**Extraction Lot:** KWG1213413  
**Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
WR-191	K1211013-001	10/31/12	11/01/12	11.624g	10ml	86.6	
Method Blank	KWG1213413-4	NA	NA	20.408g	10ml	NA	
WR-191MS	KWG1213413-1	10/31/12	11/01/12	11.824g	10ml	86.6	
WR-191DMS	KWG1213413-2	10/31/12	11/01/12	11.772g	10ml	86.6	
Lab Control Sample	KWG1213413-3	NA	NA	10.000g	10ml	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013**Surrogate Recovery Summary  
Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8082A

**Units:** PERCENT  
**Level:** Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR-191	K1211013-001	102
Method Blank	KWG1213413-4	97
WR-191MS	KWG1213413-1	102
WR-191DMS	KWG1213413-2	102
Lab Control Sample	KWG1213413-3	106

**Surrogate Recovery Control Limits (%)**

---

Sur1 = Decachlorobiphenyl 50-123

---

---

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	WR-191	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	K1211013-001	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A	<b>Extraction Lot:</b>	KWG1213413

Analyte Name	Sample Result	WR-191MS			WR-191DMS			%Rec Limits	RPD	RPD Limit			
		KGW1213413-1			KGW1213413-2								
		Matrix Spike			Duplicate Matrix Spike								
Analyte Name	Sample Result	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec						
Aroclor 1016	ND	0.964	0.977	99	0.929	0.981	95	27-128	4	40			
Aroclor 1260	ND	0.992	0.977	102	0.916	0.981	93	29-131	8	40			

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012

**Lab Control Spike Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8082A

**Units:** mg/Kg  
**Basis:** Dry

**Level:** Low

**Extraction Lot:** KWG1213413

Lab Control Sample

KWG1213413-3

**Lab Control Spike**

<b>Analyte Name</b>	<b>Result</b>	<b>Spike</b>	<b>%Rec</b>	<b>%Rec Limits</b>
		<b>Amount</b>	<b>%Rec</b>	
Aroclor 1016	0.972	1.00	97	37-121
Aroclor 1260	1.04	1.00	104	42-123

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012  
**Time Analyzed:** 12:08

**Method Blank Summary**  
**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	Method Blank	<b>Instrument ID:</b>	GC32.i
<b>Lab Code:</b>	KWG1213413-4	<b>File ID:</b>	J:\GC32\DATA\111012.B\1110F050.D
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A	<b>Extraction Lot:</b>	KWG1213413

This Method Blank applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
WR-191	K1211013-001	J:\GC32\DATA\111012.B\1110F043.D	11/11/12	08:41
WR-191MS	KWG1213413-1	J:\GC32\DATA\111012.B\1110F044.D	11/11/12	09:11
WR-191DMS	KWG1213413-2	J:\GC32\DATA\111012.B\1110F045.D	11/11/12	09:40
Lab Control Sample	KWG1213413-3	J:\GC32\DATA\111012.B\1110F049.D	11/11/12	11:39

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/06/2012  
**Date Analyzed:** 11/11/2012  
**Time Analyzed:** 11:39

**Lab Control Sample Summary**  
**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	Lab Control Sample	<b>Instrument ID:</b>	GC32.i
<b>Lab Code:</b>	KWG1213413-3	<b>File ID:</b>	J:\GC32\DATA\111012.B\1110F049.D
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A	<b>Extraction Lot:</b>	KWG1213413

This Lab Control Sample applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
WR-191	K1211013-001	J:\GC32\DATA\111012.B\1110F043.D	11/11/12	08:41
WR-191MS	KWG1213413-1	J:\GC32\DATA\111012.B\1110F044.D	11/11/12	09:11
WR-191DMS	KWG1213413-2	J:\GC32\DATA\111012.B\1110F045.D	11/11/12	09:40
Method Blank	KWG1213413-4	J:\GC32\DATA\111012.B\1110F050.D	11/11/12	12:08

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** 10/31/2012  
**Date Received:** 11/01/2012

**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	WR-191	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	K1211013-001	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1221	ND U	0.20	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1232	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1242	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1248	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1254	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1260	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1262	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1268	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	102	50-123	11/11/12	Acceptable

**Comments:** \_\_\_\_\_

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** NA  
**Date Received:** NA

**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	Method Blank	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	KWG1213413-4	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1221	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1232	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1242	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1248	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1254	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1260	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1262	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1268	ND U	0.050	0.019	1	11/06/12	11/11/12	KWG1213413	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	97	50-123	11/11/12	Acceptable

Comments: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** 10/31/2012  
**Date Received:** 11/01/2012

**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	WR-191MS	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	KWG1213413-1	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	<b>0.964</b>	0.0980	0.0190	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1221	ND U	0.20	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1232	ND U	0.098	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1242	ND U	0.098	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1248	ND U	0.098	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1254	ND U	0.098	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1260	<b>0.992</b>	0.0980	0.0190	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1262	ND U	0.098	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1268	ND U	0.098	0.019	1	11/06/12	11/11/12	KWG1213413	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	102	50-123	11/11/12	Acceptable

Comments: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** 10/31/2012  
**Date Received:** 11/01/2012

**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	WR-191DMS	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	KWG1213413-2	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	<b>0.929</b>	0.0990	0.0190	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1221	ND U	0.20	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1232	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1242	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1248	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1254	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1260	<b>0.916</b>	0.0990	0.0190	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1262	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1268	ND U	0.099	0.019	1	11/06/12	11/11/12	KWG1213413	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	102	50-123	11/11/12	Acceptable

**Comments:** \_\_\_\_\_

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** NA  
**Date Received:** NA

**Polychlorinated Biphenyls (PCBs)**

<b>Sample Name:</b>	Lab Control Sample	<b>Units:</b>	mg/Kg
<b>Lab Code:</b>	KWG1213413-3	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8082A		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	<b>0.972</b>	0.100	0.0190	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1221	ND U	0.20	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1232	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1242	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1248	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1254	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1260	<b>1.04</b>	0.100	0.0190	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1262	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	
Aroclor 1268	ND U	0.10	0.019	1	11/06/12	11/11/12	KWG1213413	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	106	50-123	11/11/12	Acceptable

**Comments:** \_\_\_\_\_

---

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-35MS

Level ID	File ID	Level ID	File ID
A	\cash1\acqudata\GC32\Data\081712.b\0817F003.D	Q	\cash1\acqudata\GC32\Data\081712.b\0817F019.D
B	\cash1\acqudata\GC32\Data\081712.b\0817F004.D	R	\cash1\acqudata\GC32\Data\081712.b\0817F020.D
C	\cash1\acqudata\GC32\Data\081712.b\0817F005.D	S	\cash1\acqudata\GC32\Data\081712.b\0817F021.D
D	\cash1\acqudata\GC32\Data\081712.b\0817F006.D	T	\cash1\acqudata\GC32\Data\081712.b\0817F022.D
E	\cash1\acqudata\GC32\Data\081712.b\0817F007.D	U	\cash1\acqudata\GC32\Data\081712.b\0817F023.D
F	\cash1\acqudata\GC32\Data\081712.b\0817F008.D	V	\cash1\acqudata\GC32\Data\081712.b\0817F024.D
G	\cash1\acqudata\GC32\Data\081712.b\0817F009.D	W	\cash1\acqudata\GC32\Data\081712.b\0817F025.D
H	\cash1\acqudata\GC32\Data\081712.b\0817F010.D	X	\cash1\acqudata\GC32\Data\081712.b\0817F026.D
I	\cash1\acqudata\GC32\Data\081712.b\0817F011.D	Y	\cash1\acqudata\GC32\Data\081712.b\0817F027.D
J	\cash1\acqudata\GC32\Data\081712.b\0817F012.D	Z	\cash1\acqudata\GC32\Data\081712.b\0817F028.D
K	\cash1\acqudata\GC32\Data\081712.b\0817F013.D	AA	\cash1\acqudata\GC32\Data\081712.b\0817F029.D
L	\cash1\acqudata\GC32\Data\081712.b\0817F014.D	AB	\cash1\acqudata\GC32\Data\081712.b\0817F030.D
M	\cash1\acqudata\GC32\Data\081712.b\0817F015.D	AC	\cash1\acqudata\GC32\Data\081712.b\0817F031.D
N	\cash1\acqudata\GC32\Data\081712.b\0817F016.D	AD	\cash1\acqudata\GC32\Data\081712.b\0817F032.D
O	\cash1\acqudata\GC32\Data\081712.b\0817F017.D		
P	\cash1\acqudata\GC32\Data\081712.b\0817F018.D		

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Decachlorobiphenyl	A	2.5	90000	B	5.0	88100	C	50	85800	D	100	85000	E	200	79000
	F	500	79100												
Aroclor 1016 {1}	A	25	1280	B	50	1210	C	500	1410	D	1000	1390	E	2000	1250
	F	5000	1160												
Aroclor 1016 {2}	A	25	4020	B	50	4210	C	500	4230	D	1000	4140	E	2000	3790
	F	5000	3710												
Aroclor 1016 {3}	A	25	2880	B	50	2750	C	500	2970	D	1000	2870	E	2000	2600
	F	5000	2500												
Aroclor 1016 {4}	A	25	1490	B	50	1520	C	500	1750	D	1000	1730	E	2000	1580
	F	5000	1540												
Aroclor 1016 {5}	A	25	2260	B	50	2230	C	500	2410	D	1000	2340	E	2000	2080
	F	5000	1970												
Aroclor 1260 {1}	A	25	5360	B	50	5000	C	500	5020	D	1000	4870	E	2000	4390
	F	5000	4270												
Aroclor 1260 {2}	A	25	6750	B	50	6240	C	500	6160	D	1000	6040	E	2000	5500
	F	5000	5380												
Aroclor 1260 {3}	A	25	6060	B	50	5410	C	500	5770	D	1000	5620	E	2000	5170
	F	5000	5190												
Aroclor 1260 {4}	A	25	4280	B	50	4140	C	500	4290	D	1000	4200	E	2000	3840
	F	5000	3760												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-35MS

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Aroclor 1260 {5}	A	25	9740	B	50	9290	C	500	9440	D	1000	9520	E	2000	8950
	F	5000	9130												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-35MS

<b>Analyte Name</b>	<b>Compound Type</b>	<b>Calibration Evaluation</b>				
		<b>Fit Type</b>	<b>Eval.</b>	<b>Eval. Result</b>	<b>Q</b>	<b>Control Criteria</b>
Decachlorobiphenyl	SURR	AverageRF	% RSD	5.4		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	7.6		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	5.5		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	6.6		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	6.8		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	7.4		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	8.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	8.4		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	6.2		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	5.6		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	3.1		≤ 20

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012  
**Date Analyzed:** 08/18/2012

**Second Source Calibration Verification**  
**Polychlorinated Biphenyls (PCBs)**

<b>Calibration Type:</b>	External Standard	<b>Calibration ID:</b>	CAL11797
<b>Analysis Method:</b>	8082A	<b>Units:</b>	ng/mL
<b>File ID:</b>	\cash1\acquidata\GC32\Data\081712.b\0817F033.D \cash1\acquidata\GC32\Data\081712.b\0817F034.D \cash1\acquidata\GC32\Data\081712.b\0817F035.D \cash1\acquidata\GC32\Data\081712.b\0817F036.D \cash1\acquidata\GC32\Data\081712.b\0817F037.D \cash1\acquidata\GC32\Data\081712.b\0817F038.D \cash1\acquidata\GC32\Data\081712.b\0817F039.D \cash1\acquidata\GC32\Data\081712.b\0817F040.D \cash1\acquidata\GC32\Data\081712.b\0817F041.D	<b>Column ID:</b>	DB-35MS

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016	1000	1100	NA	NA	NA	10	$\pm$ 20 %	NA
Aroclor 1016 {1}	1000	1100	1290	1430	11	NA	$\pm$ 100 %	AverageRF
Aroclor 1016 {2}	1000	1100	4020	4540	13	NA	$\pm$ 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2760	2970	7	NA	$\pm$ 100 %	AverageRF
Aroclor 1016 {4}	1000	1100	1600	1800	12	NA	$\pm$ 100 %	AverageRF
Aroclor 1016 {5}	1000	1100	2220	2340	5	NA	$\pm$ 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	3	$\pm$ 20 %	NA
Aroclor 1260 {1}	1000	990	4820	4790	-1	NA	$\pm$ 100 %	AverageRF
Aroclor 1260 {2}	1000	980	6010	5880	-2	NA	$\pm$ 100 %	AverageRF
Aroclor 1260 {3}	1000	890	5540	4930	-11	NA	$\pm$ 100 %	AverageRF
Aroclor 1260 {4}	1000	1200	4090	4780	17	NA	$\pm$ 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	9350	10600	13	NA	$\pm$ 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-XLB

Level ID	File ID	Level ID	File ID
A	\cash1\acqudata\GC32\Data\081712_r.b\0817F003.D	Q	\cash1\acqudata\GC32\Data\081712_r.b\0817F019.D
B	\cash1\acqudata\GC32\Data\081712_r.b\0817F004.D	R	\cash1\acqudata\GC32\Data\081712_r.b\0817F020.D
C	\cash1\acqudata\GC32\Data\081712_r.b\0817F005.D	S	\cash1\acqudata\GC32\Data\081712_r.b\0817F021.D
D	\cash1\acqudata\GC32\Data\081712_r.b\0817F006.D	T	\cash1\acqudata\GC32\Data\081712_r.b\0817F022.D
E	\cash1\acqudata\GC32\Data\081712_r.b\0817F007.D	U	\cash1\acqudata\GC32\Data\081712_r.b\0817F023.D
F	\cash1\acqudata\GC32\Data\081712_r.b\0817F008.D	V	\cash1\acqudata\GC32\Data\081712_r.b\0817F024.D
G	\cash1\acqudata\GC32\Data\081712_r.b\0817F009.D	W	\cash1\acqudata\GC32\Data\081712_r.b\0817F025.D
H	\cash1\acqudata\GC32\Data\081712_r.b\0817F010.D	X	\cash1\acqudata\GC32\Data\081712_r.b\0817F026.D
I	\cash1\acqudata\GC32\Data\081712_r.b\0817F011.D	Y	\cash1\acqudata\GC32\Data\081712_r.b\0817F027.D
J	\cash1\acqudata\GC32\Data\081712_r.b\0817F012.D	Z	\cash1\acqudata\GC32\Data\081712_r.b\0817F028.D
K	\cash1\acqudata\GC32\Data\081712_r.b\0817F013.D	AA	\cash1\acqudata\GC32\Data\081712_r.b\0817F029.D
L	\cash1\acqudata\GC32\Data\081712_r.b\0817F014.D	AB	\cash1\acqudata\GC32\Data\081712_r.b\0817F030.D
M	\cash1\acqudata\GC32\Data\081712_r.b\0817F015.D	AC	\cash1\acqudata\GC32\Data\081712_r.b\0817F031.D
N	\cash1\acqudata\GC32\Data\081712_r.b\0817F016.D	AD	\cash1\acqudata\GC32\Data\081712_r.b\0817F032.D
O	\cash1\acqudata\GC32\Data\081712_r.b\0817F017.D		
P	\cash1\acqudata\GC32\Data\081712_r.b\0817F018.D		

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Decachlorobiphenyl	A	2.5	1.15E+5	B	5.0	1.06E+5	C	50	1.01E+5	D	100	98300	E	200	87700
	F	500	83200												
Aroclor 1016 {1}	A	25	2830	B	50	2960	C	500	2830	D	1000	2670	E	2000	2350
	F	5000	2160												
Aroclor 1016 {2}	A	25	5050	B	50	4860	C	500	4860	D	1000	4680	E	2000	4250
	F	5000	4090												
Aroclor 1016 {3}	A	25	2810	B	50	2750	C	500	2760	D	1000	2640	E	2000	2380
	F	5000	2240												
Aroclor 1016 {4}	A	25	2390	B	50	2420	C	500	2350	D	1000	2200	E	2000	1940
	F	5000	1760												
Aroclor 1016 {5}	A	25	2800	B	50	2620	C	500	2590	D	1000	2450	E	2000	2160
	F	5000	1980												
Aroclor 1260 {1}	A	25	7030	B	50	6570	C	500	5780	D	1000	5500	E	2000	4870
	F	5000	4570												
Aroclor 1260 {2}	A	25	8200	B	50	7900	C	500	7110	D	1000	6760	E	2000	6010
	F	5000	5680												
Aroclor 1260 {3}	A	25	9260	B	50	9070	C	500	8360	D	1000	8000	E	2000	7220
	F	5000	6900												
Aroclor 1260 {4}	A	25	4810	B	50	5080	C	500	4690	D	1000	4460	E	2000	3950
	F	5000	3690												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-XLB

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
Aroclor 1260 {5}	A	25	12000	B	50	12200	C	500	10800	D	1000	10500	E	2000	9590
	F	5000	9420												

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Calibration Date:** 08/17/2012

**Initial Calibration Summary**  
**Polychlorinated Biphenyls (PCBs)**

**Calibration ID:** CAL11797  
**Instrument ID:** GC32.i

**Column:** DB-XLB

<b>Analyte Name</b>	<b>Compound Type</b>	<b>Calibration Evaluation</b>				
		<b>Fit Type</b>	<b>Eval.</b>	<b>Eval. Result</b>	<b>Q</b>	<b>Control Criteria</b>
Decachlorobiphenyl	SURR	AverageRF	% RSD	11.9		≤ 20
Aroclor 1016 {1}	MULTI	AverageRF	% RSD	11.9		≤ 20
Aroclor 1016 {2}	MULTI	AverageRF	% RSD	8.2		≤ 20
Aroclor 1016 {3}	MULTI	AverageRF	% RSD	9.0		≤ 20
Aroclor 1016 {4}	MULTI	AverageRF	% RSD	12.3		≤ 20
Aroclor 1016 {5}	MULTI	AverageRF	% RSD	12.6		≤ 20
Aroclor 1260 {1}	MULTI	AverageRF	% RSD	16.6		≤ 20
Aroclor 1260 {2}	MULTI	AverageRF	% RSD	14.4		≤ 20
Aroclor 1260 {3}	MULTI	AverageRF	% RSD	11.8		≤ 20
Aroclor 1260 {4}	MULTI	AverageRF	% RSD	11.9		≤ 20
Aroclor 1260 {5}	MULTI	AverageRF	% RSD	10.8		≤ 20

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 08/17/2012  
**Date Analyzed:** 08/18/2012

**Second Source Calibration Verification**  
**Polychlorinated Biphenyls (PCBs)**

<b>Calibration Type:</b>	External Standard	<b>Calibration ID:</b>	CAL11797
<b>Analysis Method:</b>	8082A	<b>Units:</b>	ng/mL
<b>File ID:</b>	\cash1\acquidata\GC32\Data\081712_r.b\0817F033.D \cash1\acquidata\GC32\Data\081712_r.b\0817F034.D \cash1\acquidata\GC32\Data\081712_r.b\0817F035.D \cash1\acquidata\GC32\Data\081712_r.b\0817F036.D \cash1\acquidata\GC32\Data\081712_r.b\0817F037.D \cash1\acquidata\GC32\Data\081712_r.b\0817F038.D \cash1\acquidata\GC32\Data\081712_r.b\0817F039.D \cash1\acquidata\GC32\Data\081712_r.b\0817F040.D \cash1\acquidata\GC32\Data\081712_r.b\0817F041.D		
		<b>Column ID:</b>	DB-XLB

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Aroclor 1016	1000	1000	NA	NA	NA	5	± 20 %	NA
Aroclor 1016 {1}	1000	1100	2630	2810	7	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	1000	4630	4770	3	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2600	2790	7	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	1000	2180	2240	3	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	1000	2430	2550	5	NA	± 100 %	AverageRF
Aroclor 1260	1000	1000	NA	NA	NA	4	± 20 %	NA
Aroclor 1260 {1}	1000	970	5720	5540	-3	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	970	6940	6760	-3	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	920	8140	7510	-8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1200	4450	5320	20	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	10800	12000	12	NA	± 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012.B\1110F041.D**Column ID:** DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	100	110	84500	94800	12	NA	± 20 %	AverageRF
Aroclor 1016	1000	1100	NA	NA	NA	14	± 20 %	NA
Aroclor 1016 {1}	1000	1100	1290	1470	15	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	1100	4020	4580	14	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2760	3100	12	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	1200	1600	1880	17	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	1100	2220	2460	11	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	8	± 20 %	NA
Aroclor 1260 {1}	1000	1100	4820	5110	6	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	6010	6400	6	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	5540	5970	8	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	4090	4500	10	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	9350	10100	9	NA	± 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012\_R.B\1110F041.D**Column ID:** DB-XLB

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	100	110	98600	108000	9	NA	± 20 %	AverageRF
Aroclor 1016	1000	1100	NA	NA	NA	10	± 20 %	NA
Aroclor 1016 {1}	1000	1100	2630	2900	10	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	1100	4630	5050	9	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2600	2890	11	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	1100	2180	2390	10	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	1100	2430	2650	9	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	5	± 20 %	NA
Aroclor 1260 {1}	1000	1000	5720	5920	4	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1000	6940	7260	5	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	8140	8650	6	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	4450	4800	8	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1000	10800	11200	4	NA	± 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012.B\1110F051.D**Column ID:** DB-35MS

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Decachlorobiphenyl	100	120	84500	97500	15	NA	± 20 %	AverageRF
Aroclor 1016	1000	1200	NA	NA	NA	16	± 20 %	NA
Aroclor 1016 {1}	1000	1200	1290	1500	17	NA	± 100 %	AverageRF
Aroclor 1016 {2}	1000	1200	4020	4690	17	NA	± 100 %	AverageRF
Aroclor 1016 {3}	1000	1100	2760	3140	14	NA	± 100 %	AverageRF
Aroclor 1016 {4}	1000	1200	1600	1910	19	NA	± 100 %	AverageRF
Aroclor 1016 {5}	1000	1100	2220	2530	14	NA	± 100 %	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	10	± 20 %	NA
Aroclor 1260 {1}	1000	1100	4820	5210	8	NA	± 100 %	AverageRF
Aroclor 1260 {2}	1000	1100	6010	6470	8	NA	± 100 %	AverageRF
Aroclor 1260 {3}	1000	1100	5540	6060	9	NA	± 100 %	AverageRF
Aroclor 1260 {4}	1000	1100	4090	4590	12	NA	± 100 %	AverageRF
Aroclor 1260 {5}	1000	1100	9350	10300	10	NA	± 100 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013**Date Analyzed:** 11/11/2012

**Continuing Calibration Verification Summary  
Polychlorinated Biphenyls (PCBs)**

**Calibration Type:** External Standard**Calibration Date:** 08/17/2012**Analysis Method:** 8082A**Calibration ID:** CAL11797**Analysis Lot:** KWG1213410**Units:** ng/mL**File ID:** \\CASH1\ACQUDATA\GC32\DATA\111012\_R.B\1110F051.D**Column ID:** DB-XLB

<b>Analyte Name</b>	<b>Expected</b>	<b>Result</b>	<b>Average</b>	<b>CCV</b>	<b>%D</b>	<b>%Drift</b>	<b>Criteria</b>	<b>Curve Fit</b>
			<b>RF</b>	<b>RF</b>				
Decachlorobiphenyl	100	110	98600	109000	11	NA	$\pm 20\%$	AverageRF
Aroclor 1016	1000	1100	NA	NA	NA	12	$\pm 20\%$	NA
Aroclor 1016 {1}	1000	1100	2630	2970	13	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {2}	1000	1100	4630	5100	10	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {3}	1000	1100	2600	2930	13	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {4}	1000	1100	2180	2420	11	NA	$\pm 100\%$	AverageRF
Aroclor 1016 {5}	1000	1100	2430	2690	11	NA	$\pm 100\%$	AverageRF
Aroclor 1260	1000	1100	NA	NA	NA	7	$\pm 20\%$	NA
Aroclor 1260 {1}	1000	1000	5720	5990	5	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {2}	1000	1100	6940	7350	6	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {3}	1000	1100	8140	8800	8	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {4}	1000	1100	4450	4900	10	NA	$\pm 100\%$	AverageRF
Aroclor 1260 {5}	1000	1100	10800	11500	7	NA	$\pm 100\%$	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**  
Now part of the ALS Group

**Client:** Ash Creek Associates, Inc.                           **Service Request:** K1211013  
**Project:** 1056-03

**Cover Page - Organic Analysis Data Package**  
**Polynuclear Aromatic Hydrocarbons**

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>
WR-191	K1211013-001	10/31/2012	11/01/2012

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** 10/31/2012  
**Date Received:** 11/01/2012

**Polynuclear Aromatic Hydrocarbons**

**Sample Name:** WR-191  
**Lab Code:** K1211013-001  
**Extraction Method:** EPA 3541  
**Analysis Method:** 8270D SIM

**Units:** ug/Kg  
**Basis:** Dry

**Level:** Low

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	3.5 J	4.8	0.60	1	11/12/12	11/27/12	KWG1213429	
2-Methylnaphthalene	1.6 J	4.8	0.46	1	11/12/12	11/27/12	KWG1213429	
1-Methylnaphthalene	1.0 J	4.8	0.51	1	11/12/12	11/27/12	KWG1213429	
Acenaphthylene	2.6 J	4.8	0.59	1	11/12/12	11/27/12	KWG1213429	
Acenaphthene	3.4 J	4.8	0.76	1	11/12/12	11/27/12	KWG1213429	
Fluorene	1.8 J	4.8	0.61	1	11/12/12	11/27/12	KWG1213429	
Phenanthrene	26	4.8	1.4	1	11/12/12	11/27/12	KWG1213429	
Anthracene	7.0	4.8	0.58	1	11/12/12	11/27/12	KWG1213429	
Fluoranthene	69	4.8	0.98	1	11/12/12	11/27/12	KWG1213429	
Pyrene	67	4.8	0.76	1	11/12/12	11/27/12	KWG1213429	
Benz(a)anthracene	41	4.8	0.72	1	11/12/12	11/27/12	KWG1213429	
Chrysene	58	4.8	0.80	1	11/12/12	11/27/12	KWG1213429	
Benzo(b)fluoranthene	76	4.8	0.92	1	11/12/12	11/27/12	KWG1213429	
Benzo(k)fluoranthene	26	4.8	0.87	1	11/12/12	11/27/12	KWG1213429	
Benzo(a)pyrene	56	4.8	0.76	1	11/12/12	11/27/12	KWG1213429	
Indeno(1,2,3-cd)pyrene	53	4.8	0.87	1	11/12/12	11/27/12	KWG1213429	*
Dibenz(a,h)anthracene	12	4.8	0.80	1	11/12/12	11/27/12	KWG1213429	
Benzo(g,h,i)perylene	46	4.8	0.85	1	11/12/12	11/27/12	KWG1213429	

\* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	17-104	11/27/12	Acceptable
Fluoranthene-d10	77	27-106	11/27/12	Acceptable
Terphenyl-d14	89	35-109	11/27/12	Acceptable

**Comments:** \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

## Analytical Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Collected:** NA  
**Date Received:** NA

**Polynuclear Aromatic Hydrocarbons**

<b>Sample Name:</b>	Method Blank	<b>Units:</b>	ug/Kg
<b>Lab Code:</b>	KWG1213429-5	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8270D SIM		

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND U	2.5	0.60	1	11/12/12	11/27/12	KWG1213429	
2-Methylnaphthalene	ND U	2.5	0.46	1	11/12/12	11/27/12	KWG1213429	
1-Methylnaphthalene	ND U	2.5	0.51	1	11/12/12	11/27/12	KWG1213429	
Acenaphthylene	ND U	2.5	0.59	1	11/12/12	11/27/12	KWG1213429	
Acenaphthene	ND U	2.5	0.76	1	11/12/12	11/27/12	KWG1213429	
Fluorene	ND U	2.5	0.61	1	11/12/12	11/27/12	KWG1213429	
Phenanthrene	ND U	2.5	1.4	1	11/12/12	11/27/12	KWG1213429	
Anthracene	ND U	2.5	0.58	1	11/12/12	11/27/12	KWG1213429	
Fluoranthene	ND U	2.5	0.98	1	11/12/12	11/27/12	KWG1213429	
Pyrene	ND U	2.5	0.76	1	11/12/12	11/27/12	KWG1213429	
Benz(a)anthracene	ND U	2.5	0.72	1	11/12/12	11/27/12	KWG1213429	
Chrysene	ND U	2.5	0.80	1	11/12/12	11/27/12	KWG1213429	
Benzo(b)fluoranthene	ND U	2.5	0.92	1	11/12/12	11/27/12	KWG1213429	
Benzo(k)fluoranthene	ND U	2.5	0.87	1	11/12/12	11/27/12	KWG1213429	
Benzo(a)pyrene	ND U	2.5	0.76	1	11/12/12	11/27/12	KWG1213429	
Indeno(1,2,3-cd)pyrene	ND U	2.5	0.87	1	11/12/12	11/27/12	KWG1213429	
Dibenz(a,h)anthracene	ND U	2.5	0.80	1	11/12/12	11/27/12	KWG1213429	
Benzo(g,h,i)perylene	ND U	2.5	0.85	1	11/12/12	11/27/12	KWG1213429	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	68	17-104	11/27/12	Acceptable
Fluoranthene-d10	74	27-106	11/27/12	Acceptable
Terphenyl-d14	84	35-109	11/27/12	Acceptable

**Comments:** \_\_\_\_\_

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013

**Surrogate Recovery Summary**  
**Polynuclear Aromatic Hydrocarbons**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270D SIM

**Units:** PERCENT  
**Level:** Low

<b>Sample Name</b>	<b>Lab Code</b>	<b>Sur1</b>	<b>Sur2</b>	<b>Sur3</b>
WR-191	K1211013-001	66	77	89
Batch QC	K1211301-001	71	78	85
Method Blank	KWG1213429-5	68	74	84
Batch QCMS	KWG1213429-1	62	67	71
Batch QCDMS	KWG1213429-2	67	74	80
Lab Control Sample	KWG1213429-3	61	68	71
Duplicate Lab Control Sample	KWG1213429-4	74	82	88

**Surrogate Recovery Control Limits (%)**


---

Sur1 = Fluorene-d10	17-104
Sur2 = Fluoranthene-d10	27-106
Sur3 = Terphenyl-d14	35-109

---

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Date Analyzed:** 11/27/2012  
**Time Analyzed:** 00:19

**Internal Standard Area and RT Summary**  
**Polynuclear Aromatic Hydrocarbons**

**File ID:** J:\MS11\DATA\112612\1126F033.D  
**Instrument ID:** MS11  
**Analysis Method:** 8270D SIM

**Lab Code:** KWG1214045-2  
**Analysis Lot:** KWG1214045

	Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
	<u>Area</u>	<u>RT</u>	<u>Area</u>	<u>RT</u>	<u>Area</u>	<u>RT</u>
<b>Results ==&gt;</b>	57,375	4.87	33,603	6.28	70,439	7.52
<b>Upper Limit ==&gt;</b>	114,750	5.37	67,206	6.78	140,878	8.02
<b>Lower Limit ==&gt;</b>	28,688	4.37	16,802	5.78	35,220	7.02
<b>ICAL Result ==&gt;</b>	85,020	4.99	49,065	6.41	94,866	7.64

*Associated Analyses*

Method Blank	KWG1213429-5	56,206	4.86	34,570	6.28	69,975	7.53
Lab Control Sample	KWG1213429-3	51,868	4.86	31,357	6.28	66,278	7.52
Duplicate Lab Control Sample	KWG1213429-4	52,223	4.86	31,459	6.28	65,763	7.52
Batch QCMS	KWG1213429-1	53,385	4.86	31,908	6.28	68,267	7.52
Batch QCDMS	KWG1213429-2	50,814	4.86	30,574	6.28	65,429	7.52
Batch QC	K1211301-001	50,473	4.86	31,293	6.28	63,924	7.53
WR-191	K1211013-001	56,097	4.86	35,684	6.28	71,051	7.52

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Date Analyzed:** 11/27/2012  
**Time Analyzed:** 00:19

**Internal Standard Area and RT Summary**  
**Polynuclear Aromatic Hydrocarbons**

**File ID:** J:\MS11\DATA\112612\1126F033.D  
**Instrument ID:** MS11  
**Analysis Method:** 8270D SIM

**Lab Code:** KWG1214045-2  
**Analysis Lot:** KWG1214045

	Chrysene-d12		Perylene-d12	
	<u>Area</u>	<u>RT</u>	<u>Area</u>	<u>RT</u>
<b>Results ==&gt;</b>	86,562	10.27	91,697	13.99
<b>Upper Limit ==&gt;</b>	173,124	10.77	183,394	14.49
<b>Lower Limit ==&gt;</b>	43,281	9.77	45,849	13.49
<b>ICAL Result ==&gt;</b>	123,084	10.45	108,017	14.23

*Associated Analyses*

Method Blank	KWG1213429-5	84,900	10.28	84,931	13.99
Lab Control Sample	KWG1213429-3	83,149	10.27	82,840	13.99
Duplicate Lab Control Sample	KWG1213429-4	80,707	10.27	81,781	13.99
Batch QCMS	KWG1213429-1	82,874	10.27	83,479	13.99
Batch QCDMS	KWG1213429-2	80,083	10.27	81,425	13.99
Batch QC	K1211301-001	78,934	10.27	77,140	13.99
WR-191	K1211013-001	81,038	10.27	83,271	13.99

Results flagged with an asterisk (\*) indicate values outside control criteria.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/12/2012  
**Date Analyzed:** 11/27/2012

**Matrix Spike/Duplicate Matrix Spike Summary**  
**Polynuclear Aromatic Hydrocarbons**

<b>Sample Name:</b>	Batch QC	<b>Units:</b>	ug/Kg
<b>Lab Code:</b>	K1211301-001	<b>Basis:</b>	Dry
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8270D SIM	<b>Extraction Lot:</b>	KWG1213429

Analyte Name	Sample Result	Batch QCMS			Batch QCDMS			%Rec Limits	RPD	RPD Limit			
		KWG1213429-1			KWG1213429-2								
		Matrix Spike			Duplicate Matrix Spike								
Analyte Name	Sample Result	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec						
Naphthalene	ND	207	309	67	227	311	73	23-114	9	40			
2-Methylnaphthalene	ND	219	309	71	244	311	78	24-115	11	40			
1-Methylnaphthalene	ND	211	309	68	236	311	76	26-133	11	40			
Acenaphthylene	ND	221	309	72	246	311	79	32-117	11	40			
Acenaphthene	ND	210	309	68	228	311	73	33-118	8	40			
Fluorene	ND	224	309	73	248	311	80	33-125	10	40			
Phenanthrene	ND	202	309	66	221	311	71	29-125	9	40			
Anthracene	ND	204	309	66	242	311	78	30-127	17	40			
Fluoranthene	ND	237	309	77	263	311	84	35-139	10	40			
Pyrene	ND	226	309	73	256	311	82	27-134	12	40			
Benz(a)anthracene	ND	240	309	78	269	311	87	35-122	12	40			
Chrysene	ND	236	309	76	266	311	85	36-126	12	40			
Benzo(b)fluoranthene	ND	249	309	81	271	311	87	35-124	9	40			
Benzo(k)fluoranthene	ND	243	309	79	266	311	86	38-124	9	40			
Benzo(a)pyrene	ND	269	309	87	293	311	94	37-123	9	40			
Indeno(1,2,3-cd)pyrene	ND	307	309	100	333	311	107	28-133	8	40			
Dibenz(a,h)anthracene	ND	280	309	91	305	311	98	32-125	9	40			
Benzo(g,h,i)perylene	ND	263	309	85	287	311	92	33-128	9	40			

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/12/2012  
**Date Analyzed:** 11/27/2012

**Lab Control Spike/Duplicate Lab Control Spike Summary**  
**Polynuclear Aromatic Hydrocarbons**

**Extraction Method:** EPA 3541      **Units:** ug/Kg  
**Analysis Method:** 8270D SIM      **Basis:** Dry  
      **Level:** Low  
      **Extraction Lot:** KWG1213429

Analyte Name	Lab Control Sample KWG1213429-3			Duplicate Lab Control Sample KWG1213429-4			%Rec Limits	RPD Limit		
	Lab Control Spike			Duplicate Lab Control Spike						
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec				
Naphthalene	327	500	65	377	500	75	32-124	14	40	
2-Methylnaphthalene	351	500	70	410	500	82	27-126	15	40	
1-Methylnaphthalene	345	500	69	394	500	79	37-129	13	40	
Acenaphthylene	356	500	71	412	500	82	38-126	15	40	
Acenaphthene	336	500	67	388	500	78	39-124	14	40	
Fluorene	357	500	71	415	500	83	39-129	15	40	
Phenanthrene	331	500	66	391	500	78	39-123	17	40	
Anthracene	342	500	68	397	500	79	38-130	15	40	
Fluoranthene	390	500	78	449	500	90	39-135	14	40	
Pyrene	365	500	73	431	500	86	39-134	16	40	
Benz(a)anthracene	386	500	77	464	500	93	46-120	18	40	
Chrysene	382	500	76	450	500	90	49-120	16	40	
Benzo(b)fluoranthene	397	500	79	459	500	92	51-121	15	40	
Benzo(k)fluoranthene	393	500	79	452	500	90	55-120	14	40	
Benzo(a)pyrene	430	500	86	510	500	102	49-122	17	40	
Indeno(1,2,3-cd)pyrene	488	500	98	577	500	115	40-128	17	40	
Dibenz(a,h)anthracene	456	500	91	539	500	108	43-125	17	40	
Benzo(g,h,i)perylene	421	500	84	506	500	101	49-122	18	40	

Results flagged with an asterisk (\*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/12/2012  
**Date Analyzed:** 11/27/2012  
**Time Analyzed:** 01:13

**Method Blank Summary**  
**Polynuclear Aromatic Hydrocarbons**

<b>Sample Name:</b>	Method Blank	<b>Instrument ID:</b>	MS11
<b>Lab Code:</b>	KWG1213429-5	<b>File ID:</b>	J:\MS11\DATA\112612\1126F035.D
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8270D SIM	<b>Extraction Lot:</b>	KWG1213429

This Method Blank applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
Lab Control Sample	KWG1213429-3	J:\MS11\DATA\112612\1126F036.D	11/27/12	01:39
Duplicate Lab Control Sample	KWG1213429-4	J:\MS11\DATA\112612\1126F037.D	11/27/12	02:07
Batch QCMS	KWG1213429-1	J:\MS11\DATA\112612\1126F038.D	11/27/12	02:33
Batch QCDMS	KWG1213429-2	J:\MS11\DATA\112612\1126F039.D	11/27/12	03:00
Batch QC	K1211301-001	J:\MS11\DATA\112612\1126F040.D	11/27/12	03:28
WR-191	K1211013-001	J:\MS11\DATA\112612\1126F045.D	11/27/12	05:43

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Report

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013  
**Date Extracted:** 11/12/2012  
**Date Analyzed:** 11/27/2012  
**Time Analyzed:** 01:39

**Lab Control Sample Summary**  
**Polynuclear Aromatic Hydrocarbons**

<b>Sample Name:</b>	Lab Control Sample	<b>Instrument ID:</b>	MS11
<b>Lab Code:</b>	KWG1213429-3	<b>File ID:</b>	J:\MS11\DATA\112612\1126F036.D
<b>Extraction Method:</b>	EPA 3541	<b>Level:</b>	Low
<b>Analysis Method:</b>	8270D SIM	<b>Extraction Lot:</b>	KWG1213429

This Lab Control Sample applies to the following analyses:

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>
Method Blank	KWG1213429-5	J:\MS11\DATA\112612\1126F035.D	11/27/12	01:13
Batch QCMS	KWG1213429-1	J:\MS11\DATA\112612\1126F038.D	11/27/12	02:33
Batch QCDMS	KWG1213429-2	J:\MS11\DATA\112612\1126F039.D	11/27/12	03:00
Batch QC	K1211301-001	J:\MS11\DATA\112612\1126F040.D	11/27/12	03:28
WR-191	K1211013-001	J:\MS11\DATA\112612\1126F045.D	11/27/12	05:43

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Date Analyzed:** 11/26/2012  
**Time Analyzed:** 23:52

**Tune Summary**  
**Polynuclear Aromatic Hydrocarbons**

**File ID:** J:\MS11\DATA\112612\1126F032.D

**Instrument ID:** MS11

**Analysis Method:** 8270D SIM

**Column:** KWG1214045

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
365	442	1	50	5.0	32024	PASS
441	443	0	100	73.7	95856	PASS
442	442	100	100	100.0	645056	PASS
443	442	15	24	20.2	130016	PASS
51	198	10	80	56.5	147264	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	42.3	110200	PASS
70	69	0	2	1.2	1277	PASS
127	198	10	80	46.1	120160	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	40.4	260800	PASS
199	198	5	9	6.2	16292	PASS
275	198	10	60	42.4	110600	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1214045-2	J:\MS11\DATA\112612\1126F033.D	11/27/2012	00:19	
Method Blank	KWG1213429-5	J:\MS11\DATA\112612\1126F035.D	11/27/2012	01:13	
Lab Control Sample	KWG1213429-3	J:\MS11\DATA\112612\1126F036.D	11/27/2012	01:39	
Duplicate Lab Control Sample	KWG1213429-4	J:\MS11\DATA\112612\1126F037.D	11/27/2012	02:07	
Batch QCMS	KWG1213429-1	J:\MS11\DATA\112612\1126F038.D	11/27/2012	02:33	
Batch QCDMS	KWG1213429-2	J:\MS11\DATA\112612\1126F039.D	11/27/2012	03:00	
Batch QC	K1211301-001	J:\MS11\DATA\112612\1126F040.D	11/27/2012	03:28	
WR-191	K1211013-001	J:\MS11\DATA\112612\1126F045.D	11/27/2012	05:43	

Results flagged with an asterisk (\*) indicate the analysis performed outside specified tune window

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 09/28/2012

**Initial Calibration Summary**  
**Polynuclear Aromatic Hydrocarbons**

**Calibration ID:** CAL11917  
**Instrument ID:** MS11

**Column:** MS

Level ID	File ID	Level ID	File ID
A	J:\MS11\DATA\092812\0928F008.D	G	J:\MS11\DATA\092812\0928F014.D
B	J:\MS11\DATA\092812\0928F009.D	H	J:\MS11\DATA\092812\0928F015.D
C	J:\MS11\DATA\092812\0928F010.D	I	J:\MS11\DATA\092812\0928F016.D
D	J:\MS11\DATA\092812\0928F011.D	J	J:\MS11\DATA\092812\0928F017.D
E	J:\MS11\DATA\092812\0928F012.D		
F	J:\MS11\DATA\092812\0928F013.D		

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF
Naphthalene	A	2.0	1.12	B	4.0	1.08	C	8.0	1.11	D	20	1.06	E	100	1.04
	F	200	1.04	G	400	1.01	H	1000	0.959	I	1600	0.916	J	2000	0.913
2-Methylnaphthalene	A	2.0	0.822	B	4.0	0.760	C	8.0	0.761	D	20	0.768	E	100	0.752
	F	200	0.755	G	400	0.737	H	1000	0.708	I	1600	0.683	J	2000	0.687
1-Methylnaphthalene	A	2.0	0.709	B	4.0	0.678	C	8.0	0.680	D	20	0.668	E	100	0.666
	F	200	0.664	G	400	0.648	H	1000	0.630	I	1600	0.603	J	2000	0.610
Acenaphthylene	A	2.0	1.89	B	4.0	1.70	C	8.0	1.80	D	20	1.79	E	100	1.84
	F	200	1.88	G	400	1.89	H	1000	1.86	I	1600	1.80	J	2000	1.80
Acenaphthene	A	2.0	1.18	B	4.0	1.09	C	8.0	1.13	D	20	1.15	E	100	1.14
	F	200	1.14	G	400	1.11	H	1000	1.10	I	1600	1.07	J	2000	1.07
Fluorene	A	2.0	1.40	B	4.0	1.27	C	8.0	1.42	D	20	1.43	E	100	1.42
	F	200	1.40	G	400	1.36	H	1000	1.31	I	1600	1.27	J	2000	1.28
Phenanthrene	A	2.0	1.29	B	4.0	1.27	C	8.0	1.19	D	20	1.09	E	100	1.04
	F	200	1.07	G	400	1.03	H	1000	1.04	I	1600	0.968	J	2000	0.989
Anthracene	A	2.0	1.07	B	4.0	1.06	C	8.0	1.09	D	20	1.09	E	100	1.07
	F	200	1.10	G	400	1.09	H	1000	1.03	I	1600	0.954	J	2000	0.969
Fluoranthene	A	2.0	1.23	B	4.0	1.18	C	8.0	1.24	D	20	1.25	E	100	1.29
	F	200	1.22	G	400	1.14	H	1000	1.08	I	1600	1.05	J	2000	1.02
Pyrene	A	2.0	1.12	B	4.0	1.07	C	8.0	1.16	D	20	1.15	E	100	1.05
	F	200	0.969	G	400	0.907	H	1000	0.881	I	1600	0.934	J	2000	0.866
Benz(a)anthracene	A	2.0	1.17	B	4.0	1.08	C	8.0	0.984	D	20	0.996	E	100	0.945
	F	200	0.976	G	400	0.980	H	1000	1.00	I	1600	1.00	J	2000	0.981
Chrysene	A	2.0	0.945	B	4.0	0.916	C	8.0	0.978	D	20	1.02	E	100	0.979
	F	200	0.994	G	400	0.970	H	1000	0.948	I	1600	0.941	J	2000	0.932
Benzo(b)fluoranthene	A	2.0	1.05	B	4.0	1.02	C	8.0	1.07	D	20	1.12	E	100	1.15
	F	200	1.19	G	400	1.19	H	1000	1.17	I	1600	1.13	J	2000	1.15
Benzo(k)fluoranthene	A	2.0	0.969	B	4.0	0.960	C	8.0	1.01	D	20	1.10	E	100	1.12
	F	200	1.15	G	400	1.17	H	1000	1.13	I	1600	1.11	J	2000	1.11

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 09/28/2012

**Initial Calibration Summary**  
**Polynuclear Aromatic Hydrocarbons**

**Calibration ID:** CAL11917  
**Instrument ID:** MS11

**Column:** MS

Analyte Name	Level			Level			Level			Level			Level		
	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF	ID	Amt	RRF
Benzo(a)pyrene	A	2.0	0.769	B	4.0	0.728	C	8.0	0.809	D	20	0.856	E	100	0.895
	F	200	0.954	G	400	0.986	H	1000	1.01	I	1600	0.995	J	2000	1.01
Indeno(1,2,3-cd)pyrene	A	2.0	0.800	B	4.0	0.738	C	8.0	0.763	D	20	0.817	E	100	0.814
	F	200	0.818	G	400	0.779	H	1000	0.780	I	1600	0.785	J	2000	0.798
Dibenz(a,h)anthracene	A	2.0	0.846	B	4.0	0.830	C	8.0	0.877	D	20	0.924	E	100	0.932
	F	200	0.936	G	400	0.884	H	1000	0.880	I	1600	0.882	J	2000	0.878
Benzo(g,h,i)perylene	A	2.0	1.10	B	4.0	0.988	C	8.0	1.07	D	20	1.11	E	100	1.09
	F	200	1.06	G	400	0.980	H	1000	0.932	I	1600	0.914	J	2000	0.904
Fluorene-d10	A	2.0	1.39	B	4.0	1.26	C	8.0	1.23	D	20	1.21	E	100	1.21
	F	200	1.21	G	400	1.19	H	1000	1.18	I	1600	1.15	J	2000	1.17
Fluoranthene-d10							C	8.0	1.15	D	20	1.16	E	100	1.18
	F	200	1.13	G	400	1.09	H	1000	1.06	I	1600	1.05	J	2000	1.05
Terphenyl-d14				B	4.0	0.861	C	8.0	0.865	D	20	0.899	E	100	0.817
	F	200	0.758	G	400	0.747	H	1000	0.739	I	1600	0.789	J	2000	0.766

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

## COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 09/28/2012

**Initial Calibration Summary**  
**Polynuclear Aromatic Hydrocarbons**

**Calibration ID:** CAL11917  
**Instrument ID:** MS11

**Column:** MS

<b>Analyte Name</b>	<b>Compound Type</b>	<b>Calibration Evaluation</b>				<b>RRF Evaluation</b>		
		<b>Fit Type</b>	<b>Eval.</b>	<b>Eval. Result</b>	<b>Q</b>	<b>Control Criteria</b>	<b>Average RRF</b>	<b>Q</b>
Naphthalene	MS	AverageRF	% RSD	7.3		≤ 20	1.03	0.70
2-Methylnaphthalene	MS	AverageRF	% RSD	5.6		≤ 20	0.743	0.40
1-Methylnaphthalene	MS	AverageRF	% RSD	5.1		≤ 20	0.656	0.01
Acenaphthylene	MS	AverageRF	% RSD	3.3		≤ 20	1.82	0.90
Acenaphthene	MS	AverageRF	% RSD	3.3		≤ 20	1.12	0.90
Fluorene	MS	AverageRF	% RSD	4.8		≤ 20	1.36	0.90
Phenanthrene	MS	AverageRF	% RSD	10.3		≤ 20	1.10	0.70
Anthracene	MS	AverageRF	% RSD	4.9		≤ 20	1.05	0.70
Fluoranthene	MS	AverageRF	% RSD	8.1		≤ 20	1.17	0.60
Pyrene	MS	AverageRF	% RSD	11.1		≤ 20	1.01	0.60
Benz(a)anthracene	MS	AverageRF	% RSD	6.6		≤ 20	1.01	0.80
Chrysene	MS	AverageRF	% RSD	3.3		≤ 20	0.962	0.70
Benzo(b)fluoranthene	MS	AverageRF	% RSD	5.3		≤ 20	1.12	0.70
Benzo(k)fluoranthene	MS	AverageRF	% RSD	6.9		≤ 20	1.08	0.70
Benzo(a)pyrene	MS	AverageRF	% RSD	11.7		≤ 20	0.901	0.70
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	3.3		≤ 20	0.789	0.50
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	3.9		≤ 20	0.887	0.40
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	7.8		≤ 20	1.01	0.50
Fluorene-d10	SURR	AverageRF	% RSD	5.5		≤ 20	1.22	0.01
Fluoranthene-d10	SURR	AverageRF	% RSD	4.6		≤ 20	1.11	0.01
Terphenyl-d14	SURR	AverageRF	% RSD	7.3		≤ 20	0.804	0.01

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Calibration Date:** 09/28/2012  
**Date Analyzed:** 09/28/2012

**Second Source Calibration Verification**  
**Polymer Aromatic Hydrocarbons**

**Calibration Type:** Internal Standard  
**Analysis Method:** 8270D SIM

**Calibration ID:** CAL11917  
**Units:** ng/ml

**File ID:** J:\MS11\DATA\092812\0928F018.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	390	1.03	0.998	-3	NA	± 30 %	AverageRF
2-Methylnaphthalene	400	380	0.743	0.699	-6	NA	± 30 %	AverageRF
1-Methylnaphthalene	400	410	0.656	0.674	3	NA	± 30 %	AverageRF
Acenaphthylene	400	400	1.82	1.84	1	NA	± 30 %	AverageRF
Acenaphthene	400	390	1.12	1.09	-3	NA	± 30 %	AverageRF
Fluorene	400	390	1.36	1.32	-3	NA	± 30 %	AverageRF
Phenanthrene	400	380	1.10	1.04	-5	NA	± 30 %	AverageRF
Anthracene	400	410	1.05	1.09	4	NA	± 30 %	AverageRF
Fluoranthene	400	420	1.17	1.24	6	NA	± 30 %	AverageRF
Pyrene	400	390	1.01	0.985	-3	NA	± 30 %	AverageRF
Benz(a)anthracene	400	380	1.01	0.971	-4	NA	± 30 %	AverageRF
Chrysene	400	390	0.962	0.929	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	400	390	1.12	1.10	-2	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	400	410	1.08	1.12	4	NA	± 30 %	AverageRF
Benzo(a)pyrene	400	420	0.901	0.937	4	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	390	0.789	0.775	-2	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	400	400	0.887	0.879	-1	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	400	390	1.01	0.983	-3	NA	± 30 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013  
**Date Analyzed:** 11/27/2012

**Continuing Calibration Verification Summary**  
**Polynuclear Aromatic Hydrocarbons**

<b>Calibration Type:</b>	Internal Standard	<b>Calibration Date:</b>	09/28/2012
<b>Analysis Method:</b>	8270D SIM	<b>Calibration ID:</b>	CAL11917
		<b>Analysis Lot:</b>	KWG1214045
		<b>Units:</b>	ng/ml
<b>File ID:</b>	J:\MS11\DATA\112612\1126F033.D		

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	400	0.70	1.03	1.03	0	NA	± 20 %	AverageRF
2-Methylnaphthalene	400	420	0.40	0.743	0.786	6	NA	± 20 %	AverageRF
1-Methylnaphthalene	400	410	0.01	0.656	0.678	3	NA	± 20 %	AverageRF
Acenaphthylene	400	430	0.90	1.82	1.96	7	NA	± 20 %	AverageRF
Acenaphthene	400	410	0.90	1.12	1.14	2	NA	± 20 %	AverageRF
Fluorene	400	420	0.90	1.36	1.42	5	NA	± 20 %	AverageRF
Phenanthrene	400	380	0.70	1.10	1.05	-5	NA	± 20 %	AverageRF
Anthracene	400	410	0.70	1.05	1.09	3	NA	± 20 %	AverageRF
Fluoranthene	400	440	0.60	1.17	1.28	9	NA	± 20 %	AverageRF
Pyrene	400	420	0.60	1.01	1.07	6	NA	± 20 %	AverageRF
Benz(a)anthracene	400	440	0.80	1.01	1.12	11	NA	± 20 %	AverageRF
Chrysene	400	420	0.70	0.962	1.02	6	NA	± 20 %	AverageRF
Benzo(b)fluoranthene	400	410	0.70	1.12	1.15	3	NA	± 20 %	AverageRF
Benzo(k)fluoranthene	400	420	0.70	1.08	1.13	5	NA	± 20 %	AverageRF
Benzo(a)pyrene	400	470	0.70	0.901	1.06	18	NA	± 20 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	520	0.50	0.789	1.02	29 *	NA	± 20 %	AverageRF
Dibenz(a,h)anthracene	400	480	0.40	0.887	1.06	19	NA	± 20 %	AverageRF
Benzo(g,h,i)perylene	400	450	0.50	1.01	1.13	12	NA	± 20 %	AverageRF
Fluorene-d10	400	390	0.01	1.22	1.19	-3	NA	± 20 %	AverageRF
Fluoranthene-d10	400	410	0.01	1.11	1.14	3	NA	± 20 %	AverageRF
Terphenyl-d14	400	380	0.01	0.804	0.773	-4	NA	± 20 %	AverageRF

Results flagged with an asterisk (\*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03

**Service Request:** K1211013

**Analysis Run Log**  
**Polynuclear Aromatic Hydrocarbons**

**Analysis Method:** 8270D SIM**Analysis Lot:** KWG1214045**Instrument ID:** MS11

<b>File ID</b>	<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Analysis Started</b>	<b>Start Time</b>	<b>Q</b>	<b>Date Analysis Finished</b>	<b>Finish Time</b>
1126F032.D	GC/MS Tuning - Decafluorotriphenylphosphine	KWG1214045-1	11/26/2012	23:52		11/27/2012	00:11
1126F033.D	Continuing Calibration Verification	KWG1214045-2	11/27/2012	00:19		11/27/2012	00:38
1126F035.D	Method Blank	KWG1213429-5	11/27/2012	01:13		11/27/2012	01:32
1126F036.D	Lab Control Sample	KWG1213429-3	11/27/2012	01:39		11/27/2012	01:59
1126F037.D	Duplicate Lab Control Sample	KWG1213429-4	11/27/2012	02:07		11/27/2012	02:26
1126F038.D	Batch QCMS	KWG1213429-1	11/27/2012	02:33		11/27/2012	02:52
1126F039.D	Batch QCDMS	KWG1213429-2	11/27/2012	03:00		11/27/2012	03:19
1126F040.D	Batch QC	K1211301-001	11/27/2012	03:28		11/27/2012	03:47
1126F041.D	ZZZZZZ	ZZZZZZ	11/27/2012	03:54		11/27/2012	04:13
1126F042.D	ZZZZZZ	ZZZZZZ	11/27/2012	04:21		11/27/2012	04:40
1126F043.D	ZZZZZZ	ZZZZZZ	11/27/2012	04:49		11/27/2012	05:08
1126F044.D	ZZZZZZ	ZZZZZZ	11/27/2012	05:16		11/27/2012	05:35
1126F045.D	WR-191	K1211013-001	11/27/2012	05:43		11/27/2012	06:02
1126F046.D	ZZZZZZ	ZZZZZZ	11/27/2012	06:11		11/27/2012	06:30
1126F047.D	ZZZZZZ	ZZZZZZ	11/27/2012	06:38		11/27/2012	06:57
1126F048.D	ZZZZZZ	ZZZZZZ	11/27/2012	07:05		11/27/2012	07:24
1126F049.D	ZZZZZZ	ZZZZZZ	11/27/2012	07:33		11/27/2012	07:52
1126F050.D	ZZZZZZ	ZZZZZZ	11/27/2012	08:00		11/27/2012	08:19
1126F051.D	ZZZZZZ	ZZZZZZ	11/27/2012	08:27		11/27/2012	08:46
1126F052.D	ZZZZZZ	ZZZZZZ	11/27/2012	08:55		11/27/2012	09:14
1126F053.D	ZZZZZZ	ZZZZZZ	11/27/2012	09:22		11/27/2012	09:41
1126F054.D	ZZZZZZ	ZZZZZZ	11/27/2012	09:49		11/27/2012	10:08
1126F055.D	ZZZZZZ	ZZZZZZ	11/27/2012	10:17		11/27/2012	10:36
1126F056.D	ZZZZZZ	ZZZZZZ	11/27/2012	10:45		11/27/2012	11:04
1126F057.D	ZZZZZZ	ZZZZZZ	11/27/2012	11:12		11/27/2012	11:31
1126F058.D	ZZZZZZ	ZZZZZZ	11/27/2012	11:40		11/27/2012	11:59

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis

**COLUMBIA ANALYTICAL SERVICES, INC.**

Now part of the ALS Group

QA/QC Results

**Client:** Ash Creek Associates, Inc.  
**Project:** 1056-03  
**Sample Matrix:** Soil

**Service Request:** K1211013**Date Extracted:** 11/12/2012

**Extraction Prep Log**  
**Polynuclear Aromatic Hydrocarbons**

**Extraction Method:** EPA 3541  
**Analysis Method:** 8270D SIM

**Extraction Lot:** KWG1213429  
**Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
WR-191	K1211013-001	10/31/12	11/01/12	12.057g	10ml	86.6	
Method Blank	KWG1213429-5	NA	NA	20.362g	10ml	NA	
Batch QC	K1211301-001	NA	NA	20.362g	10ml	79.7	*
Batch QCMS	KWG1213429-1	NA	NA	20.326g	10ml	79.7	
Batch QCDMS	KWG1213429-2	NA	NA	20.160g	10ml	79.7	
Lab Control Sample	KWG1213429-3	NA	NA	10.000g	10ml	NA	
Duplicate Lab Control Sample	KWG1213429-4	NA	NA	10.000g	10ml	NA	

Results flagged with an asterisk (\*) indicate the holding time was exceeded for the analysis